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THE JOURNAL
of the
MISSOURI
STATE MEDICAL ASSOCIATION

Vol. 49 JANUARY, 1952 No. 1

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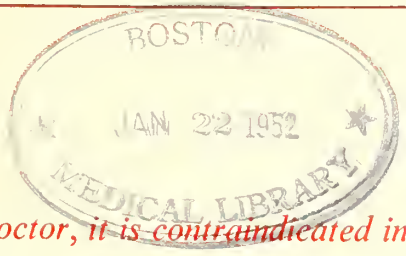
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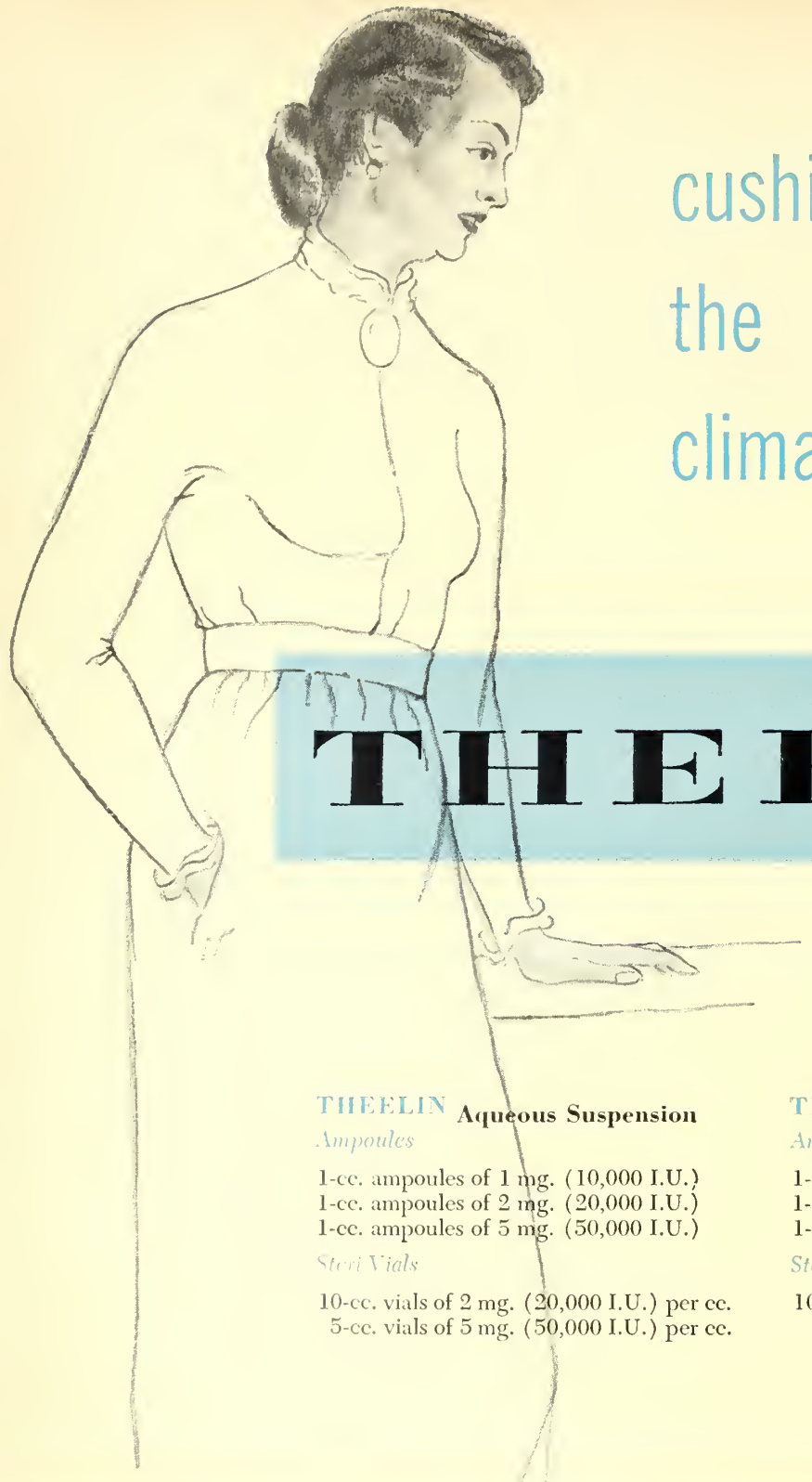


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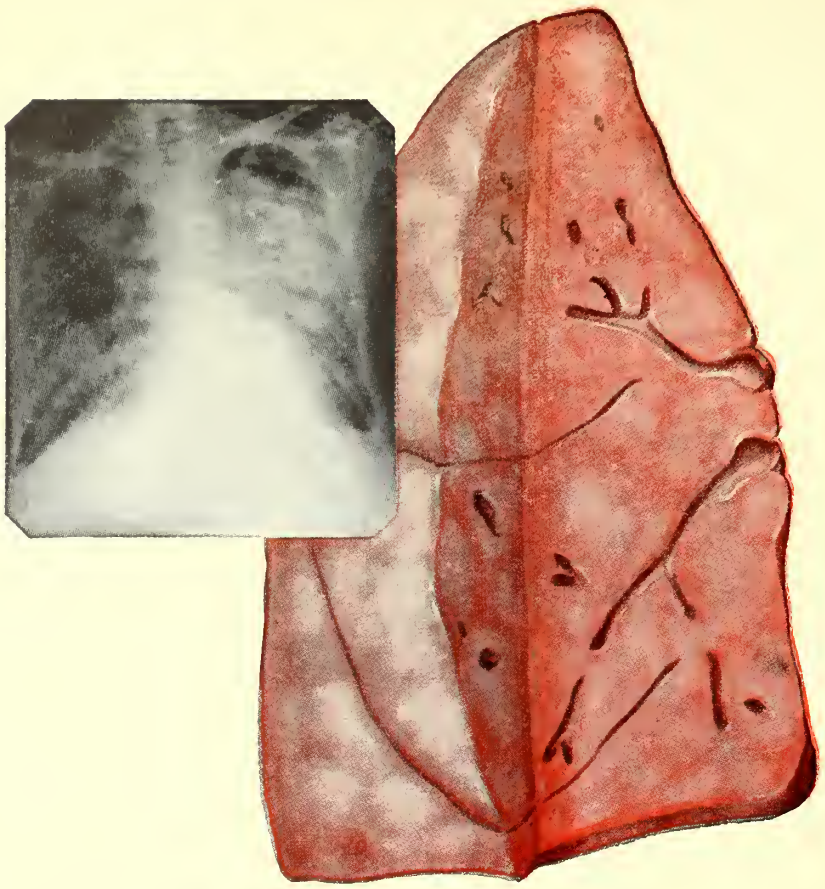
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Meat... Its Place in the Dietary Management of Nephritis

The formerly held tenet that protein intake should be restricted for all patients with impaired renal function, in order to afford the kidney physiologic "rest," is no longer valid.[1] Except for infection and some neoplastic and traumatic disorders, the treatment of renal disease is nonspecific and essentially symptomatic. The clinical problem centers largely on diet regulation, in the hope of stimulating the kidneys to improve impaired function, without unduly risking harm.

Even in the presence of azotemia, a protein intake of 60 to 80 Gm. per day has not been found harmful to the renal patient. Low protein intake, on the other hand, together with urinary loss of protein may encourage the development of asthenia, anemia, hypoproteinemia, and edema.[2] Also pertinent to the dietary management in renal disease is the experimental finding that high protein diets in normal dogs promote higher urea clearance and greater renal blood flow than do low protein diets.[3,4]

Except in anuria, a protein intake adequate to maintain nitrogen balance has been suggested.[1] Although as little as 30 to 40 Gm. of protein per day may suffice for this purpose in the fever-free patient at bed rest, few occasions arise when 1 Gm. of protein per day per kilogram of body weight may not be given safely. In the presence of significant proteinuria, unless specifically contraindicated, the dietary protein may be increased beyond that amount in order to counterbalance the urinary protein loss.

Contrary to the still prevalent ancient belief among the laity, red meats are just as harmless to the renal patient as white meats; nor is there evidence that plant proteins are more beneficial in nephritis than animal proteins. As with the normal person, the dietary protein of the patient should be of high biologic value.

Meat, because of its high content of biologically complete protein, may contribute valuably to the protein needs of the nephritic patient. The nutritional importance of meat, however, is not limited to its contained protein. Meat also contributes highly significant amounts of iron and of the vitamin B complex, including niacin, pantothenic acid, pyridoxine, riboflavin, thiamine, and the newly discovered vitamin B_{12}. Other salient features of meat in the dietary of the patient are its high palatability, its stimulation of the digestive processes, its satiety value, and its easy and practically complete digestibility.

---

1. Mann, G. V., and Stare, F. J.: Nutritional Needs in Illness and Disease, Handbook of Nutrition, American Medical Association, ed. 2, Philadelphia, The Blakiston Company, 1951, chap. 17, p. 351.
2. Weiss, S.: Diet and Bright's Disease, Connecticut M. J. 5:496, 1941.
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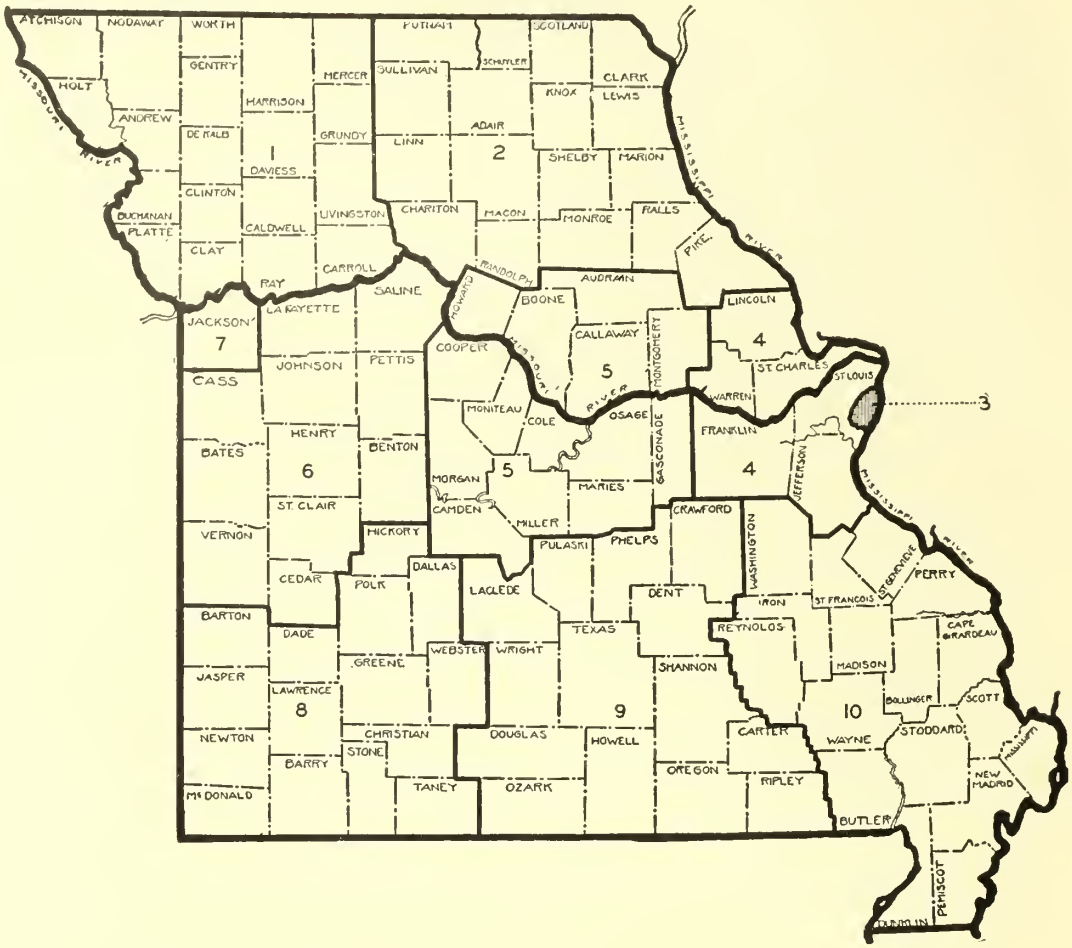
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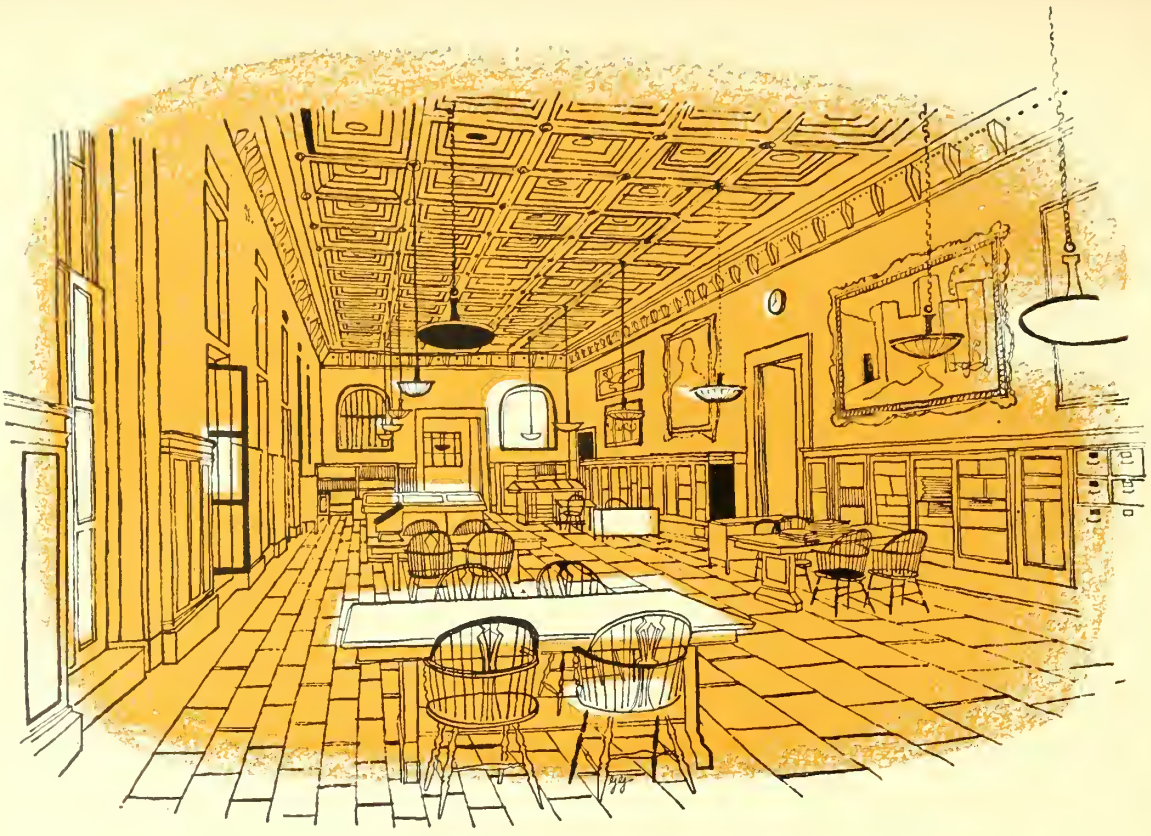
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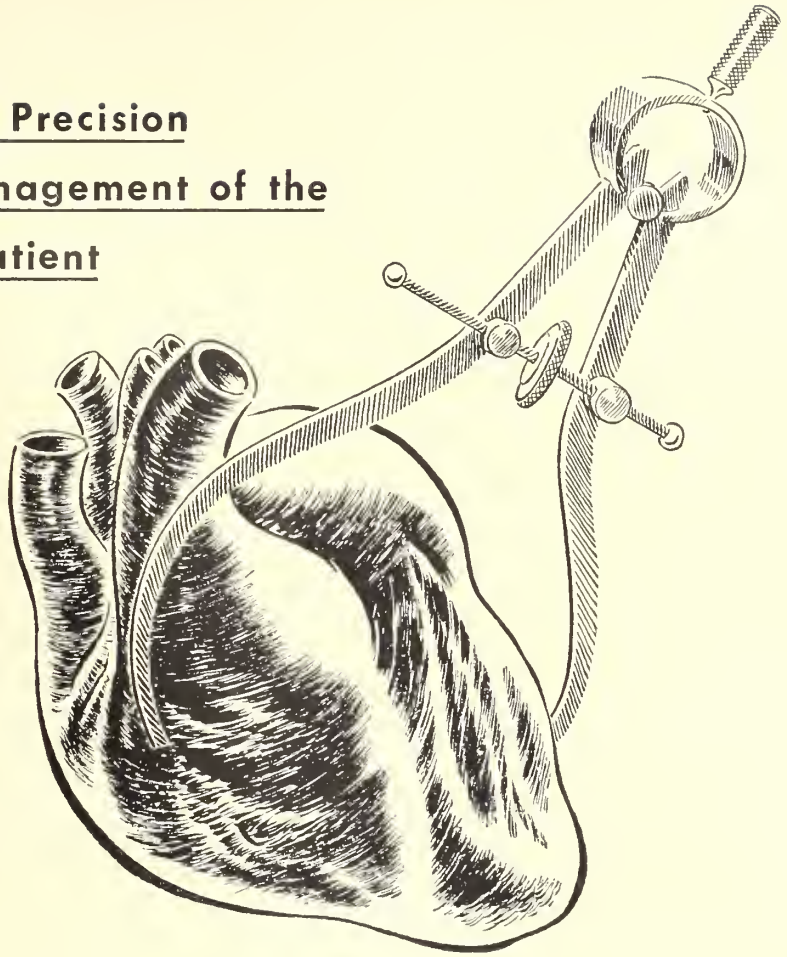
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Volume 49 | January, 1952 | Number 1

Scientific Articles

SYMPOSIUM ON CANCER OF THE FEMALE GENITAL TRACT

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ST. LOUIS, *Chairman*

PRESENTED AT THE ST. LOUIS GYNECOLOGICAL SOCIETY, DECEMBER 14, 1950

DYSONTOGENIC TUMORS OF THE LOWER FEMALE GENITAL TRACT

ROBERT M. RUCH, M.D.
ST. LOUIS

CONSIDERABLE confusion has surrounded the classification of mesodermal tumors of the female genital tract. This has been caused mainly because not all of them are mixed tumors. McFarland, who made a comprehensive review of the subject in 1935, found them under 119 different titles, mostly descriptive, such as myxoliposarcoma. He, therefore, suggested the use of dysontogenic tumors as a term under which the whole group could be classified. Even with this title and its broader confines only 447 cases of the entire female urogenital tract were found up to 1939. Dysontogenic refers to the abnormal development of the tumor from misplaced embryonic mesenchymal cells. The theory of a metaplasia or redifferentiation previously held by some observers as the histogenesis of these tumors has been practically abandoned.

Two main types of dysontogenic tumors occur. There are those which possess a loose or myxomatous stroma (fig. 1) as is presented in sarcoma botryoides and those which have a densely cellular makeup (fig. 2). The tissue components of both types are fibroblastic, myoblastic and lipoid in nature with rich vascular beds. Cartilagenous or ossified tissue is present in similar tumors of the uterus and urinary tract but is rarely present in the lower genital tract.

From the Department of Obstetrics and Gynecology, Washington University School of Medicine and the Barnard Free Skin and Cancer Hospital, St. Louis. This paper was done under American Cancer Society Fellowship.
* Deceased

Patients included in this report demonstrate mainly the repeated recurrence and the brief course usually followed before fatal termination. Only in the group of sarcoma botryoides is there any predelection for infants. Some of the more densely cellular varieties have been reported in children but are more frequent in adults. The case of sarcoma botryoides (Case 1) of this series occurs in a 7 year old girl despite its usual predelection for children under 2 years. In an infant (Case 2) with a vulvar tumor certain areas of the lesion could not be differentiated microscopically from the botryoid tumor. But in other regions a densely cellular stroma prevailed.

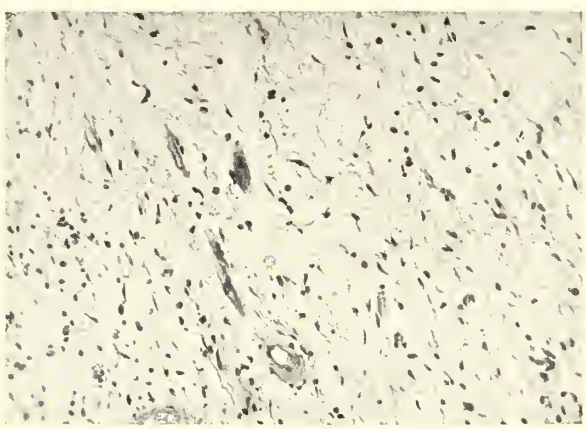


Fig. 1. Loose stroma. Sarcoma botryoides (Case 1). Small round cells predominate in the myxomatous pattern. Muscle fibers are present.

REPORT OF CASES

Case 1. A 7 year old white girl was admitted after two episodes of severe vaginal bleeding in the preceding six weeks. On examination the vagina was found to be full of pea sized, soft, friable, grape like material with some protruding through the hymineal ring. Irradiation with deep x-ray and radium was followed by some regression, but the tumor promptly returned to its original extent. She died of bilateral massive pulmonary metastases fifteen months after the diagnosis was first made. Microscopic examination showed a myxomatous stroma predominated by fibroblasts and leiomyoblasts typical of sarcoma botryoides.

Case 2. A 14 month old white infant had a well encapsulated walnut sized mass of the right labia majora. Recurrence developed three weeks after removal and postoperative irradiation applied at that time produced no regression. Four months later a right vulvectomy and Bassett were done. Metastases were found in the inguinal nodes. Two months later the left side was found involved and a left vulvectomy and Bassett were done. Thirteen months after her original diagnosis the child died with diarrhea, distention, a mass below the right inguinal scar and another mass in the perirectal area. No autopsy was done. Microscopic examination showed a myxoliposarcoma.

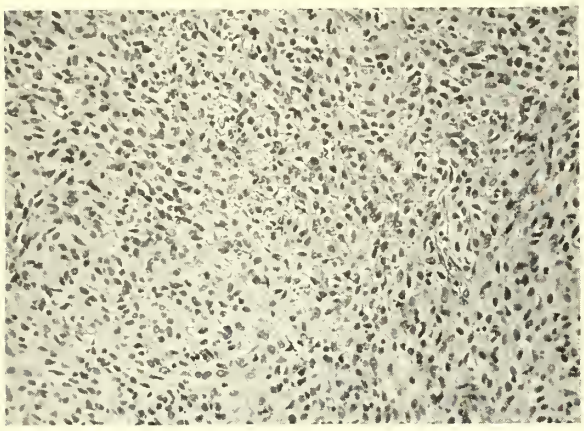


Fig. 2. Dense cellular stroma (Case 3). The spindle shaped and polygonal cells show few mitotic figures. Vacuolization is present in some cells with an occasional giant cell.

Case 3. A 61 year old white woman presented the history of bloody discharge for ten months. Three different sites of granulomatous tissue were found in the vagina. Radiation treatment produced complete regression, but recurrences appeared within a short time in two new sites. These also disappeared completely following treatment but later recurred in conjunction with inguinal node involvement. The patient died with liver metastases sixteen months after the original diagnosis. A microscopic diagnosis of sarcoma was made on all tumor biopsies.

Case 4. A 51 year old white woman was found to have an irregular tumor of the posterior vaginal wall. Bleeding had been present for one week. An operation was done with an abdomino-perineal approach entailing resection of the rectum and lower sigmoid, hysterectomy including the posterior half of the vagina and bilateral salpingo-oophorectomy. The operation was performed nine months ago and at the present time the patient is clinically free of recurrence. This was diagnosed sarcoma.

The treatment of this type of tumor has proven unsatisfactory. Most of them seem to follow roughly the same type of response pattern, whether surgery, radiation therapy or a combination of the two is used. This course is one of regression and recurrence almost like a "game of hide and seek." Most of these tumors are radiosensitive and "melt away" entirely following irradiation. However, recurrence does not wait long and, although it is sometimes at the same site, it is more frequently at some adjacent location. After reappearing a number of times locally the tumor frequently is then found either to involve many of the other pelvic viscera or to present distant metastases usually removing the case from any but future palliative therapy.

The botryoid type of children's tumor follows the same pattern but with more extensive vaginal involvement with each recurrence. This presents an even more difficult problem in treatment since it is not readily available to much surgery in this age group and since use of radium is mechanically difficult without some surgical excision.

CONCLUSIONS

Although many variations in treatment methods have been used in the patients here reported and in other clinical reports given in the literature, it is surprising how seldom this treatment is directed at the whole pelvis with its potentiality for multifocal recurrence. The use of treatment directed only to the primary lesion by such methods as local excision, small cones for applying x-ray or radium plaques applied over the tumor may be factors in the discouraging response to therapy. The use of more radical surgery as the primary treatment should be given a more adequate trial. If irradiation is to be used, the procedure must be equally radical. Local applications of x-rays and radium have been shown to be ineffectual. In every instance the attempt should be made to deliver an adequate dose to all of the tumor bearing region and potential areas of involvement should include all of the true pelvis.

SUMMARY

1. Dysontogenic tumors or tumors of defective embryonic development is a term applied to a variety of mixed tumor types including sarcoma botryoides.

2. These lesions fall into two main groups, those with a loose stromal cellular pattern and those with densely packed cells.

4. Prognosis in these cases is extremely poor. However, the use of more radical surgery, or more radical treatment by irradiation, is proposed in the attempt to improve clinical results.

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REVIEW OF THE COMPLICATIONS FROM RADIUM TREATMENT FOR CARCINOMA OF THE CERVIX UTERI

M. D. BONEBRAKE, M.D.
ST. LOUIS
AND
ALFRED I. SHERMAN, M.D.
ST. LOUIS

SINCE THE initial use of radium in the treatment of cancer of the cervix there has been a constant effort to deliver a more adequate dose to the tumor with a lesser degree of injury to normal tissue. The action of radiation is essentially one of trauma. Abnormal as well as normal tissues are affected but, in general, the effect is more marked upon malignant growths. The probability for recovery of normal tissues makes practical the clinical application of radiation. The differential in reaction between cancerous and normal tissues presents a narrow margin of safety. Arriving at quantities of radiation falling within those narrow limits is the major problem in therapy.

A review of the history of radiation therapy demonstrates three periods wherein irradiation injury to normal tissue often superseded the good results obtained by such therapy. Some of the earliest publications upon the treatment of cervical cancer with radium took cognizance of the injuries apt to occur. Then, with introduction of deep roentgen therapy, new complications were encountered. The present supervoltage and isotope therapy present a new series of problems.

In addition to total dose, other important factors to be considered in radium treatment include intensity of irradiation, duration of treatment, method of application and filtration. Attention to these factors in the technic of treatment has been responsible for the gradual decrease in the incidence of complications as well as improvement in clinical results.

In studying the complications encountered in treatment, we have reviewed those patients on the ward service of Barnes Hospital for the years 1921 to 1947. Some of these patients were included in a previous report by Crossen and Newell[37] in 1935. The patients included in this study have been followed for five years in the clinic except for those treated in 1947. Only a four year follow-up is available for that year. The League of Nations Classification has been used since 1937. All patients treated prior to that date have been reclassified to conform with the present method of classification. Complications have been studied from the standpoint of type and time of onset. An attempt has been made to correlate method of treatment and the incidence of complications, and the effect of complication upon prognosis. The types of complications have been divided into four main groups. These are: small bowel complication; large bowel complication; genitourinary injuries and local reactions.

The more common complaints presented by patients with injury to the small bowel include nausea, vomiting, anorexia, dark stools, hyperpyrexia and diarrhea. The gross and microscopic findings noted in such injuries are well known and have been described by several authors.[1, 11, 15, 28, 34, 53, 54, 55, 48, 57, 58] The mucosa of the intestine becomes injected and many plasma cells and polymorphonuclear leukocytes infiltrate the muscularis. Endarteritis is common. After treatment this lesion usually disappears gradually and there may be no late manifestation of injury. Occasionally, however, the lesion will progress and the mucosa will slough producing an ulcer that may result in a fistula. Individuals so affected have a poor prognosis. Lesions of this type are known to have occurred in only two patients of this series (0.4 per cent of patients treated). In each of these findings were confirmed at autopsy.

Large bowel reactions may be classified into intrinsic and extrinsic types. Intrinsic lesions produce symptoms that appear within the period of irradiation or shortly thereafter. These symptoms are related to the rectum and include tenesmus, bleeding, burning sensations and frequent small stools composed principally of blood and mucus. The findings at clinical examinations have been described by several authors.[2, 3, 6, 8, 9, 14, 17, 19, 25, 26, 27, 30, 31, 50, 53] Proctoscopic inspection reveals the mucosa of the anterior rectal wall opposite the cervix to be injected. The tissues are traumatized easily and bleed freely on manipulation. Hypersecretion of mucus takes place and on microscopic examination numerous inclusions can be seen in the epithelial cells. All layers of the bowel wall are edematous. Moderate degeneration of the muscle cells with vacuolization is frequent. Blood vessel walls are edematous. Patients with milder symptoms present a less severe picture and the symptoms may subside within two or three weeks.

There may be reappearance of the rectal reaction as a late complication. In some patients, on the other hand, the late reaction may develop without prior symptoms having occurred. Bleeding is quite common and sometimes necessitates transfusion. Fatal hemorrhage in one patient has been reported by Ingelman-Sundberg.[25] Anorexia and weakness are often observed and debility is noted, especially in aged individuals. Rectal examination reveals the mucosa of the anterior rectal wall directly opposite the posterior aspect of the cervix to be edematous, rough and granular. The mucosa appears to be adherent to the underlying connective tissue and muscularis. Treatment with starch enemas and cod liver oil installations results in remission in most instances. A white fibrotic scar usually persists as evidence of injury. With persistent symptoms, on the other hand, an ulcer may develop at the site of the

From the Department of Obstetrics and Gynecology, Washington University School of Medicine, St. Louis.

Table 1. *Incidence of the different clinical stages of cervical cancer in 490 patients treated from 1921 to 1947.*

CERVICAL CANCER—COMPLICATIONS
Primary Cases—Ward Service
CLINICAL STAGE INCIDENCE

LEAGUE OF NATIONS CLASSIFICATIONS	1921 1926		1927-1931		1932-1936		1937-1941		1942-1947		Total	
	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent
I	3	15	4	6	15	12	15	12.6	37	22.5	74	15.4
II	10	50	24	38.5	47	38.5	43	36.5	89	53.1	213	43
III	6	30	24	38.5	54	44.5	46	39.5	35	20.9	165	33.9
IV	1	5	11	17	7	5	13	11.4	6	3.5	38	7.7
TOTAL	20	100	63	100	123	100	117	100	167	100	490	100

lesion. The ulceration typically shows a halo of inflammatory reaction around a crater covered with a tenacious greyish white necrotic membrane. As the size of the ulcer increases, the inflammatory margin becomes elevated and more indurated. Myriads of plasma cells, lymphocytes and occasional eosinophils are present in the tissue around the ulcer. Blood vessel walls show medial thickening. Severe endarteritis is frequent and often associated with occlusion of blood vessels. An increase in the size of the ulcerated area presents premonition of the development of a fistulous tract into the vagina. Healing is slow and if protracted for a year or longer the development of a fistula is almost inevitable. Fibrosis and induration at the site of the healed ulcer is present in most of these individuals for years after treatment. Six of the patients here reported presented induration for periods as long as ten years after treatment without evidence of recurrent carcinoma. Prolonged rectal bleeding is common because of telangiectasis which forms in the scar over the healed ulcer. Repeated trauma by the passage of fecal material tears the fibrous scar and bleeding ensues.

The so-called extrinsic rectal reaction described by Todd, Tison, Berard, Chrysel and others[3, 6, 9, 10, 12, 13, 14, 27, 28, 29, 30, 33, 34, 41, 49, 50] presents a somewhat different clinical picture from that previously described. Within the period immediately after treatment there may or may not be symptoms of early rectal injury. These symptoms may remiss or continue as in the intrinsic lesions. Usually the patient experiences increasing pain on defecation with accompanying ribbon stools. Occasionally obstipation will occur. Rectal examination reveals perirectal induration with compression and narrowing of the bowel lumen in addition to the presence of ulceration. The induration extends laterally, posteriorly and expands gradually to the pelvic wall. Colostomy has been performed in five patients (1 per cent of patients treated) because of extreme stenosis. Todd has proposed that this lesion is the result of vascular occlusion with infarction and fibroblastic proliferation. If such a perirectal reaction is mistaken for reappearing tumor, the application of additional irradiation can only result in further insult to the tissues involved. It is interesting that reports from the Radiumhemmet state that this type of lesion has not occurred in their series of patients and it has not been necessary to resort to colostomy to relieve rectal stricture.

Injury to the genitourinary system may result in dysuria, hematuria and frequency of urination. Examination reveals marked injection of the bladder mucosa which is easily traumatized. The physical findings in injury to the genitourinary system have been reported by Graves, Kickham and others.[18, 21, 23, 27, 32, 44] The bladder mucosa and underlying muscularis contain many polymorphonuclear leukocytes, plasma cells and eosinophils. Extravasation of red blood cells into the stroma is noted. Endarteritis is present. These lesions usually subside after the cessation or completion of treatment. With persistence of symptoms an ulcer usually can be demonstrated and a fistula may ultimately occur. As the ulcer slowly heals, fibrosis occurs leaving a scar as evidence of injury. Telangiectatic blood vessels

Table 2. *Incidence of complications in the different clinical stages of cervical cancer in 490 patients treated from 1921 to 1947.*

CERVICAL CANCER—COMPLICATIONS
Primary Cases—Ward Service
STAGE OF DISEASE—COMPLICATIONS

LEAGUE OF NATIONS CLASSIFICATION	1921-1926			1927-1931			1932-1936			1937-1941			1942-1947			Total		
	Cases	Complications	Per Cent	Cases	Complications	Per Cent	Cases	Complications	Per Cent	Cases	Complications	Per Cent	Cases	Complications	Per Cent	Cases	Complications	Per Cent
I	3	1	33	4	1	25	15	6	40	15	5	33	37	14	37	74	27	36
II	10	3	30	24	9	37	47	26	55	43	11	25	89	23	25	213	72	33
III	6	3	50	24	22	91	54	31	57	46	11	21	35	7	20	165	74	44
IV	1	1	100	11	9	81	7	6	85	13	4	30	6	2	33	38	22	57
TOTAL	20	8	40	63	41	65	123	69	56	117	31	26	167	46	27	490	195	39

course through the scarred areas and hematuria occasionally occurs as a result of mild trauma to these vessels. The differentiation between this benign type of hematuria and that caused by tumor infiltration of the bladder wall is sometimes difficult. This differentiation is of utmost importance to the ultimate prognosis of the patient. In other instances anuria may develop due to fibrosis of periureteral structures resulting in obstruction. The mechanism is similar to that producing the extrinsic rectal lesion.

Patients with local reactions following injury usually develop hyperpyrexia, pain, vaginal bleeding and foul discharge during the period immediately after treatment. Urinary and fecal incontinence may develop. These lesions are due to overtreatment and occur in tissues immediately adjacent to high intensity sources of radium.

In a study of complications it is necessary to establish a time factor indicating the onset of symptoms. It has been convenient to use four categories. There is first the immediate period that includes the period of irradiation which usually occupies about four weeks. Early complications are those appearing within the first three months following completion of treatment. Intermediate reactions are those developing within three to seven months after irradiation. Late complications are those occurring after seven months.

In addition, it became necessary to establish certain minimal symptoms and clinical findings as being essential for evidence of complication. An attempt has been made to include all patients with any reasonable evidence of radiation reaction. Data have been taken from clinical

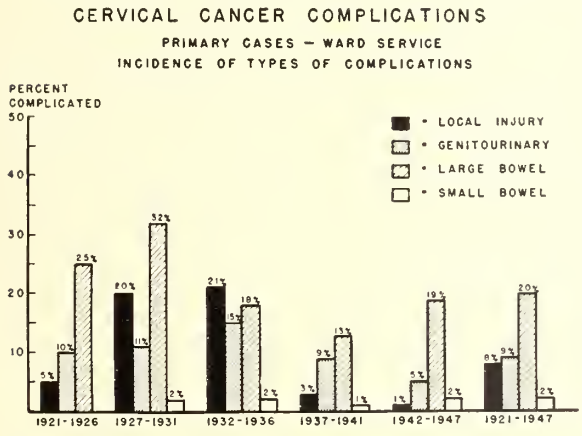


Fig. 1. Incidence of types of complications for each five year period and incidence for patients treated from 1921 to 1947.

records. Temperature charts are available for periods of hospitalization during radium treatment, but only a few individuals have been hospitalized during roentgen treatment. An elevation to 38 C. upon three or more days has been taken as evidence of complication. Follow-up records have been searched for mention of vomiting, diarrhea, rectal bleeding and urinary distress or the development of a definite lesion in the rectum, bladder or local region about the cervix.

There has been a steady growth in number of patients treated. From 1921 to 1926 only twenty primary cases of cervical cancer were admitted. For succeeding periods of five years the respective total admissions were 63, 123, 117 and 167. It is interesting to note that during the twenty-six year period from 1921 to 1947 inclusive, the incidence of Stage I lesions advanced from a low of

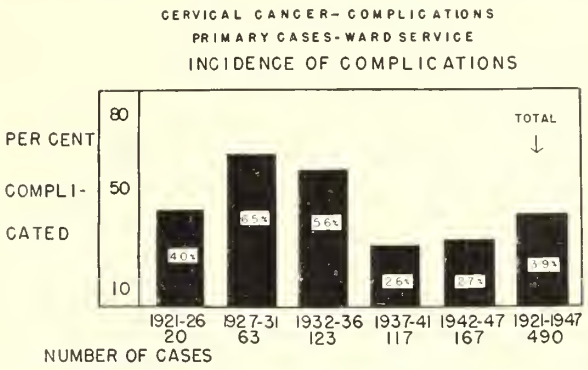


Fig. 2. Incidence of complications for each five year period and total incidence for patients treated from 1921 to 1947.

6 per cent at the beginning to a value of 22.5 per cent in the more recently treated patients (table 1). This is evidence of the progress attained by the American Cancer Society and physicians interested in encouraging patients to seek medical advice at the onset of symptoms suggesting malignant disease. For the entire series of 490 patients, 15.4 per cent were classified into Stage I, 43 per cent into Stage II, 33.9 per cent into Stage III and 7.7 per cent into Stage IV.

During the first ten years treatment was almost entirely by radium. The contribution from x-rays was small in comparison with quantities used in later years. High intensity tandems of 75 to 100 mg. were introduced into the uterine cavity, without the addition of vaginal sources. The average total dose was on the order of 3,000 mg. per hr. applied at one sitting. Between 1932 and 1936 an attempt was made to increase effectiveness of treatment by an increase in dose of radium radiation. The average tandem contained 100 mg. radium divided into two equal units of 50 mg. each. From 3,000 mg. per hr. to 5,000 mg. per hr. were applied in a single treatment. During this period protracting x-ray treatment over a longer time was begun and thereby increased the total contribution from that source.

Vaginal applications of radium were added in 1937 and became a routine procedure a year or so later. Furthermore radium treatment was divided into two or more separate applications delivering total doses on the order of 4,000 mg. per hr. to 5,000 mg. per hr. More important, however, was the reduction in strength of radium sources to units of approximately 25 mg. each.

Since 1941 there has been further modification

of radium treatment by the use of units of 5, 10 and 20 mg. strength. Needles also have been used interstitially. Vaginal sources were held in place by means of sponge rubber. More recently a modified form of the Manchester technic using plastic ovoids of different size has been adopted. The changes in roentgen treatment have been equally marked. Total doses were increased materially. The size of irradiated skin areas was reduced and, in some instances, transvaginal x-rays were employed. Treatment is protracted over a period of three to four weeks.

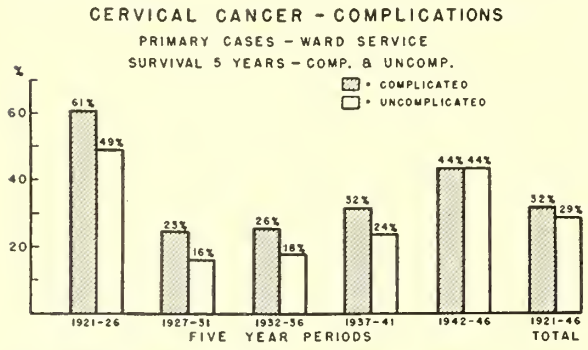


Fig. 3. Five year survival of uncomplicated and complicated patients treated from 1921 to 1946 with a comparison of results in each five year period.

Using the criteria described, there was an overall complication incidence of 39 per cent. For Stage I the incidence is 36 per cent, in Stage II it is 33 per cent, in Stage III, 44 per cent and in Stage IV, 57 per cent. These values are shown in table 2. The incidence of complications in the Stage I lesions appears excessive, and suggests that many were overtreated. Nolan and Costolow[38] have reported similar observations and found better survival rates for less intensive treatment.

The majority of the gastrointestinal and genitourinary complications occurred from four to seven months after treatment. The local reactions to injury appeared entirely within the immediate or early period. In correlating the type of lesion with frequence of complication it was found that everting lesions were less likely to be accompanied by injury to the rectum and bladder. The screening effect by an everting tumor has been described by Ingleman-Sundberg.[25] Among patients developing local reactions, 74 per cent were noted to have infiltrative lesions, 17 per cent had ulcerative lesions and 9 per cent were of the everting type. The infiltrative lesions are almost always infected and poorly vascularized at the time of treatment and are susceptible to necrosis and slough.

The incidence of the various types of complications is shown in figure I. It can be seen that the most common injury is that occurring in the large bowel. Small bowel reactions, although important, have never been a major problem. The incidence of genitourinary complications occurring in the different five periods has ranged from 5 to 15 per cent. During the last ten year period in which vaginal applicators have been used, a rather sharp reduction in those complications has been obtained. For the same reason there has been an even more marked fall in the incidence of local injuries. The addition of vaginal sources of radium improved the distribution of radiation over that obtained from a tanden alone. By this means it is possible to increase the total number of milligram hours radium applied without increasing the contribution from each individual source. The decrease in complications following the use of vaginal sources is shown more dramatically in figure 2. During the period from 1937 to 1947 the incidence of complications of all types did not exceed 27 per cent. Values prior to that time ranged from 40 per cent to 65 per cent. The higher incidence occurred during the time that 75 mg. of radium were used in the cervix with a single 25 mg. tube in the uterine cavity.

In the attempt to determine the effect of complications upon prognosis it is necessary to consider the five year survival of the patients treated. In order to include only the five year survival statistics the thirty-nine patients treated in 1947 have been omitted. Clinical results can be seen in figure 3. The patients with complications present a slightly better survival rate in the first three treatment periods. The two last treated groups present no significant difference in the complicated and uncomplicated patients. However, during the same period the prognosis was definitely improved. This demonstrates the effectiveness of the present day therapy. This improvement is due to an increase in number of sources with decrease in strength of sources as well as divided applications. For the entire series the total survival rate for those with complications is 32 per cent, but the value for those without complications is 29 per cent. During the first five year period (1921 to 1926) only twenty patients were treated. The five year survival rate for this group is 55 per cent, but the value is of no statistical significance due to the small number of patients treated. Following that period each additional group of patients shows improvement in five year survival. Total survival rate for 1927 to 1931 is 21 per cent; during the succeeding five year periods the values are 22 per cent, 25 per cent and 44 per cent for 1942 to 1946. For the entire series the value is 30 per cent. The important point made is that careful planning of treatment will decrease the incidence of complications as well as improve the clinical results.

SUMMARY

Those patients with carcinoma of the cervix treated on the ward service at the Barnes Hospital between the years 1921 and 1947 have been reviewed. Clinical experience gained during this twenty-seven year period has resulted in clinical improvement in the method of treatment applied.

Complications have been studied in regard to their type, severity, duration, time of onset and relation to five year survival. A five year survival of 30 per cent for the period is reported. A comparison of the complicated and uncomplicated cases has revealed that it is possible to improve survival results and at the same time decrease the incidence of complications.

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RADIOACTIVE COLLOIDAL GOLD FOR THE TREATMENT OF CANCER OF THE FEMALE REPRODUCTIVE TRACT

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Radioactive isotopes such as phosphorus, iodine, chromium and gold have been used in treating malignant tumors. Some of the approaches have been made upon the chemical characteristics of the element; some upon their affinity for specific cellular systems and some upon their selective concentration in cells of the reticulo-endothelial system. In addition, artificial radioactive materials recently have been introduced as a direct local treatment for malignant tumors. For the last three years studies have been carried out utilizing radioactive colloidal gold in the treatment of pelvic cancer.

Radioactive gold was chosen for several reasons. It has a safe half-life of 2.7 days. Its emission spectrum consists of a beta ray of 0.9 million electron volts and a gamma ray of 0.44 million electron volts. This tends to give it excellent localizing radiation. In addition, it is nontoxic, both chemically and physiologically in the metallic form in which it is used. Also, it is easily irradiated and manipulated into the colloidal form as used. This form of gold has a purplish color which allows it to be visually traced wherever present. The colloid is suspended in a 1 per cent pectin solution both to increase its viscosity and so prevent leakage and to decrease the absorption into the general circulation from the site of injection.

Animal experiments[1] which were carried out revealed that radioactive colloidal gold used by direct injection in treatment of transplanted squamous cell carcinoma in mice could safely and completely cure these tumors. The optimum dose required for cure was found to be 300 microcuries per cubic centimeter of tumor tissue. It was also found that when radioactive colloidal gold was injected into the paracervical tissue of rabbits it entered the lymphatic system and reached the primary and secondary regional lymph nodes. There were definite irradiation effects noted in these areas.

Radioactive colloidal gold also was injected into the peritoneal space of rabbits. Here it was found to deposit itself over the superficial surfaces of the peritoneal organs and found its way into the retroperitoneal lymph nodes causing marked irradiation effects.

Another interesting experiment was the injection of radioactive colloidal gold into the uterine horns of rabbits. In the presence of this material the usual progestational response with rapid growth and mitoses resulting from stimulation with chorionic gonadotrophin was inhibited. The range of irradiation with high doses included the ovaries which also showed irradiation effects. Animals which have been followed for eighteen months still do not show the normal tissue responsiveness after such radiation exposure.

Because of these various findings experiments were continued at a clinical level. Radioactive colloidal gold has now been used clinically in several different manners.

Because of the characteristics of carcinoma of the cervix a relatively high incidence of metastatic tumor is found in the regional lymph nodes in cases clinically felt to be localized. On analyses of the failures of treatment both surgically and radiologically for carcinoma of the cervix, the majority of recurrences are found to occur in the pelvis, both in nodes and cellular tissues lateral to the uterus. Since these failures can be explained only on the basis of residual cancer in inaccessible areas after completion of the treatment, it is only logical to expect further advancement in the treatment of this disease to depend on the development of better methods which will direct themselves toward the destruction of residual cancer in the fields of lymphatic drainage. It was with these premises that colloidal gold was used in the treatment of carcinoma of the cervix in an attempt to improve the present means of delivering safely and selectively greater amounts of radiation to desired volumes of parametrial tissue.

Twenty-four cases of early carcinoma of the cervix have now been treated in the following manner.[2] Deep X-ray treatments were omitted. With a technic simulating the insertion of radium needles into the parametrium, various amounts of radioactive gold were injected with a spinal needle into each parametrium through the vagina. It was found that this technic gave a rather uniform dispersion of the gold throughout the treated area. In addition, four of the cases had gold injected into the cervix. At various time intervals following the injections, varying from two to forty days, a radical total abdominal hysterectomy and pelvic lymphadenectomy were performed. It is not intended to advocate this form of surgical therapy for cancer of the cervix. This procedure was employed only to learn as much as possible of the use of radioactive gold without depriving the patient of adequate treatment for her disease. In addition to this treatment three of the patients had received radium applied to the cervix and uterus.

On examination of the tissues following operation, the parametrial areas injected showed definite radiation effects. Here microscopic examination revealed cellular destruction with ac-

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companying fibrosis. Throughout the tissues there were many cells of the phagocytic type consisting of large mononuclears, giant cells and lymphocytes in the process of phagocytosing gold particles. The lymphatics for the most part were packed full of these scavenger cells containing gold particles within their cytoplasm.

Definite radioactive gold deposits were found in the hypogastric, iliac and obturator nodes. Definite results of localized radiation were illustrated in these nodes. There was a disappearance of lymphocytes, accompanying cellular edema, loss of cell outline and the presence of debris from cellular disintegration. There was a marked hyperplasia of the cells of the reticulo-endothelial system and there was usually evidence of hemorrhage. Some of the nodes removed at longer intervals showed a sort of healing process consisting of fibrosis with masses of spindle cells. In three of the cases, several areas of the parametrium adjacent to the cervix contained masses of atypical cells. These resembled tumor cells but because of radiation effects in them or in the immediate vicinity could not be definitely proven to be of metastatic nature. One case was found to have definite tumor deposits in the nodes but these seemed to have been well irradiated.

In addition, the value of the interstitial injection of gold was illustrated at operation. It was found that some of the outlying irremovable tissues laterally on the pelvic wall and in intimate proximity to vital organs showed definite evidence of infiltration with gold.

These observations give some encouragement to the idea that radioactive gold may be used to irradiate the parametrium and regional lymph nodes and thereby enhance the probability of cure.

The patients have been observed carefully following the injections but have shown no outward reactions to the use of the gold. The longest followed case is only eighteen months but as yet none of the cases have developed recurrences.

In four cases of carcinoma of the vulva there has been opportunity to follow and observe the actual dispersion of the gold. In these cases in which inguinal lymphadenectomies were to be performed following the vulvectomies, radioactive gold was injected into the inguinal regions. Although the gold was injected from three to four centimeters beneath the skin surface and was not observed immediately following the injection, twelve to eighteen hours later the gold was distributed diffusely over the entire skin surface. It also gave an index of radioactivity in the area, for, although no evidence of necrosis was noted in the skin, there was an erythematous reaction and epilation confined to the discolored areas. In addition, here also, the gold was found phagocytosed and carried to the metastatic nodules. Numerous lymphatic channels were seen leading to the tumor masses and carrying large quantities of gold. Along the periphery and in some areas deeply situated in the masses were accumulations of gold particles with definite tumor destruction.

Because radioactive gold consists almost entirely of beta ray whose effect is confined to a limited periphery, it is of value in localized therapy. In two cases vaginal metastases persisted after treatment with x-ray and radium. Since it was not feasible to give these areas more therapy because the overlying skin and mucosa had already received more than tolerance levels, they were treated with interstitial gold injections. Regression of the tumor masses occured without a breakdown in the overlying tissues. In these cases, a cancerocidal dose was delivered to the mass itself without subjecting the normal surrounding tissues to over-irradiation.

Radioactive gold has been used also in the treatment of ascites due to generalized peritoneal involvement from ovarian cancer. The results of treatment with x-rays for this type of complication is uniformly poor and will in almost all cases give the patient a great deal of distress from radiation sickness. In ten such cases in which the patients were being tapped at frequent intervals and had already received x-ray treatment, radioactive gold was injected directly into the ascitic fluid. The patients tolerated large amounts of gold in this manner without difficulty. In most of the cases, there was a definite decrease in the accumulation of the fluid and in some there was complete cessation of ascitic production for many months. Two of the cases which have been studied at autopsy showed a generalized superficial deposit of gold particles over the entire peritoneum. The retroperitoneal lymph nodes showed large accumulations of the gold with marked radiation effects.

SUMMARY

Radioactive colloidal gold has been used by parametrial injection in cases of cancer of the cervix. It was found that the parametrium and regional lymphatics could be irradiated adequately by this treatment.

It also has been injected into the peritoneum in cases of malignant ascites with definite beneficial results.

Radioactive gold also has been used and gives promise of being a beneficial adjunct in the treatment of metastatic nodules.

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IMPROVEMENT IN FINDING OF ANATOMICALLY EARLY SQUAMOUS CARCINOMA OF CERVIX UTERI

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INTRODUCTION

THE STIMULUS for this work was an inquiry as to whether a program of routine vaginal smear study, utilizing the classical Papanicolaou-Trout[1] procedure done on all new patients in the Gynecology Clinic of the Barnard Free Skin and Cancer Hospital since late 1948 had actually accomplished any greater good or whether it had merely served in the elucidation of an occasional case. The study was expanded to include the findings of the Washington University Clinics and Barnes Hospital with the end in view that thereby the findings on two separate patient populations, showing some possibly important differences but serviced by essentially the same body of gynecologists, would become visible, and that an overall greater series of cases would be studied. The eleven year period of 1940 through 1950 was decided upon to try to present a relatively long period to see if any noteworthy findings might thus come to light.

Our interest particularly lay in ascertaining what change might have occurred in detection of anatomically limited and, therefore, overwhelmingly successfully treatable cervical carcinoma.* We have, thus, except for presenting our overall material (table 1) as indicated background, confined ourselves to a consideration of squamous carcinoma of the uterine cervix in its *in situ* (Stage O) and clinical Stage I phases.

The original stagings offered on the charts were not uncritically accepted since many were made by naive stagers; due to fortunate routine, detailed descriptions of the physical findings are recorded in the charts, and more experienced reviewers have, necessarily, restaged some cases in order to attain conformity with the League of Nations criteria. All lesions were biopsy proven.

MATERIAL

Table 1 shows the overall material upon which the study is based, with breakdown into year, stage and percentage. In all, 1,327 staged cases of squamous carcinoma of cervix have been seen, 878 at the Barnard Free Skin and Cancer Hospital and 449 at Washington University-Barnes Hospital.

Figure 1 shows the year by year picture with

This work was supported in part by the St. Louis Women's Advertising Club by a grant to Barnard Free Skin and Cancer Hospital.

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* Failure to realize the importance of this desideratum, or at least failure to be guided by it in reporting their results, has been an important fact in bringing about the current low estate of "cancer detection." Most detectors have, thus, failed to differentiate between finding manageable cancer and simply finding cancer, often uselessly. As Stewart has stated, "What medicine needs is more little cancers."[2] It is these little ones we seek.

Table 1.—*New, staged cases of squamous carcinoma of cervix at Barnard Hospital, by number and per cent, for 1940 through 1950.*

Stage	1940		1941		1942		1943		1944		1945		1946		1947		1948		1949		1950		Total	Per cent of Total
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	6	9	9	15	17	2
I	28	21	23	24	21	25	19	24	13	20	17	23	22	23	7	11	16	28	23	32	16	26	205	23
II	74	56	55	57	48	56	41	51	37	57	39	53	37	38	36	56	24	42	24	34	15	24	430	49
III	27	20	11	11	14	16	15	19	12	18	13	18	27	28	15	23	15	26	8	11	15	24	172	20
IV	4	3	7	7	2	2	5	6	3	5	1	6	9	10	5	8	1	2	10	14	7	11	54	6
	133		96		85		80		65		70		95		64		57		71		62		878	

New, staged cases of squamous carcinoma of cervix at Washington University Clinics and Barnes Hospital by number and per cent, for 1940 through 1950.

Stage	1940		1941		1942		1943		1944		1945		1946		1947		1948		1949		1950		Total	Per cent of Total
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent		
0	0	0	0	0	0	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	2	4	3	1
I	7	18	6	21	4	12	4	15	12	36	14	35	11	26	8	17	15	41	19	29	23	43	123	27
II	21	53	8	29	19	56	12	44	12	36	12	30	18	43	26	54	14	38	28	42	13	24	183	41
III	10	25	10	36	9	26	8	30	5	15	10	25	3	7	13	27	7	19	14	21	11	20	100	22
IV	2	5	4	14	2	6	2	7	4	12	4	10	10	24	1	2	1	3	5	8	5	9	40	9
	40		28		34		27		33		40		42		48		37		66		54		449	
	173		124		119		107		98		110		137		112		94		137		116		1327	

respect to stage and by institution expressed in each year as percentages, with total percentages achieved by stacking blocks atop each other, of all new cases of squamous cervical carcinoma seen in that year. The third block (shaded) for each year indicates the combined average percentage of stages O plus I for the two institutions. Figure 2 shows whatever general trends there may be, for both institutions, by connecting the tops of the individual year blocks for each series.

RESULTS

It is clear that especially in the last three years, more cases of early cervical cancer have come to diagnosis in both hospitals than did previously. Certain irregularities in the figures (e.g. the 'W' per cents for 1944 and 1945, and the drops for both 'B' and 'W' in 1947) are not satisfactorily explicable. Quite conceivably the aberrations are the results of series of limited, albeit considerable, size.

Noteworthy is the fact that the increace in percentage incidence of early cervical cancer at Barnard is due largely to the great pickup of *in situ* cases, amounting in 1949 to 9 per cent of all new cases seen, and in 1950 to 15 per cent. At Washington University-Barnes Hospital, no such finding of *in situ* cases is achieved, but Stage I lesions are composing more and more of the new cases.

In both series, it is encouraging to find that, currently, 40 odd per cent of all new cervical cancer cases are either in Stage O or Stage I, and thus an overwhelming majority should be cured.

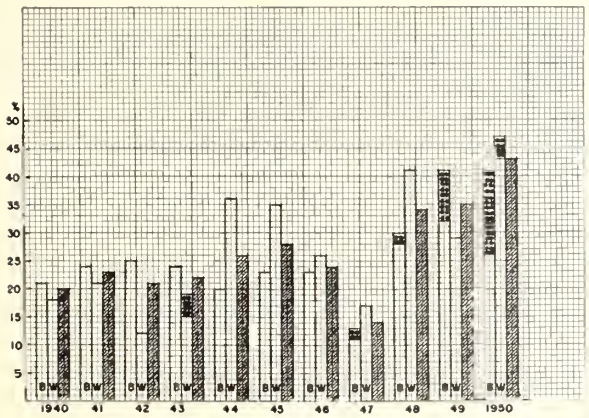


Fig. 1. Histogram showing percentage incidence of Stage 0 (dotted) and Stage I (clear) squamous carcinoma of cervix at Barnard Free Skin and Cancer Hospital (Block 'B'), and Washington University-Barnes Hospital Gynecological Clinic (Block 'W'), and average of both groups (cross-hatched), for years 1940 to 1950. (Illustrations prepared by Mr. W. G. Elle of Barnard Skin and Cancer Hospital.)

Figure 3 shows that although the total incidence of Stages O, I and II shows no noteworthy change, the total of O and I has increased sharply. This indicates that these cases are being found at the expense of Stage III.

It is interesting to note that there is general improvement with respect to the earlier diagnosis of cervical cancer in the two reporting institutions and elsewhere.[4] Table 2 offers for comparison percentage incidences of the various stages of cervical carcinoma from publications in 1938, 1948 and 1950 with the average similar percentages for Barnard Hospital and Washington University-Barnes Hospital for the eleven year period concerned here (Stage O added to Stage I).



Fig. 2. Curve showing percentage incidences of Stage 0 plus Stage I carcinoma of cervix during years 1940 to 1950.

DISCUSSION

It goes without saying that a multiplicity of factors is concerned with the increase of earlier diagnosed cases in recent years. In the Barnard series, with vaginal smears done routinely throughout 1949 and 1950, a coincident sharp rise in finding *in situ* cervical cancer has occurred. It is our thought that smears have played a bifid role:

1. They have brought cases to first light, or furthered the biopsy study of dubious lesions (including furthering biopsy study of originally unclear tissue pictures) and this might, accountingwise, be a direct service.*

Table 2.

Stage	L. of N. (5) 1938 Per cent	L. of N. (6) 1948 Per cent	L. of N. (7) 1950 Per cent	Barnard 1940-50 Per cent	W.U.-B.H. 1940-50 Per cent
I	11	15	14	25	28
II	29	39	36	49	41
III	42	34	37	20	22
IV	18	13	14	6	9

2. Probably, all in all, more important than (1), the interest stimulated in early cancer by the smear method (a) has led to a more extensive use use of biopsy for, often, clinically innocuous appearing lesions (and as has been pointed out[8] the take of early lesions goes hand-in-hand with the number of biopsies) and, (b) more pieces are taken for biopsy at one time, the essentiality of which has been well indicated by Foote and Stewart.[9] This all might well be accounted an indirect service since, in general, it is unarguable

* That this is not unique is indicated by Reagan's finding of 19 per cent *in situ* cases, in his current material.[3]

* Detailed account of experience with *in situ* carcinoma of cervix is in preparation.

that smear study has stimulated such interest. Pathologist education is also a contributing factor of moment and physician-education will doubtlessly prove a most important service in the finding of *in situ* cancer of, among other sites, the cervix.

With regard to the improved finding of Stage I cervical carcinoma in this series, speculations may be offered but the picture is not satisfyingly clear. No parallel increase in finding Stage I lesions has occurred at the Barnard, and since essentially



Fig. 3. Curve A shows combined percentage incidence of both series, of Stages 0, I and II; curve B shows similar incidence of Stage 0 and I.

the same clinical group is concerned at both hospitals, something other than education of the immediate group of physicians is clearly accountable.* The Barnes series is drawn from a much wider patient clientele with numerous consultations from other hospital services and this accounts for some early found cases. Patients reach Barnes Hospital usually on the basis of physician-referral and this again might bring about some increase in early cases being seen, on the basis of general physician education. Finally, since more of the Barnes patients are urbanites and more of the Barnard ones rural dwellers, it is entirely conceivable that the former might be both more subjected and more receptive also, to patient educational material such as that distributed by the American Cancer Society.

Further study and analysis of data seem clearly indicated in attempting to elucidate the developing discrepancy in finding of Stage I cervical carcinoma in the two hospitals.

* An exception to the statement lies in the fact that at Barnes, as well as at Barnard, more biopsies are now taken than was formerly the case. However, at Washington University-Barnes Hospital the use of biopsies is chiefly confined to cases with visible and suspected lesions, whereas at Barnard Free Skin and Cancer Hospital many clinically benign and indeed healthy looking cervices are biopsied.

CONCLUSIONS

1. As a result of newer concepts and technics, the diagnosis of curably treatable carcinoma of the uterine cervix (under the criteria laid down above) has improved in recent years, both in Barnard Free Skin and Cancer Hospital and Washington University-Barnes Hospital. As of the present, 40 odd per cent of all new cases seen in both hospitals are either *in situ* or clinical Stage I lesions.

2. Vaginal smears have been of high value in increasing the diagnosis of early cervical carcinoma, especially *in situ* cases.

3. What thanks are due to patient education and general practitioner education, both seemingly considerable, are not assessable as a result of this study.

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NEED OF CARE OF DIABETICS IN CIVIL DEFENSE PROGRAM STRESSED

The need for adequate measures to provide for the health and welfare of the one million known and an estimated one million unknown diabetics in this country as part of the national civil defense program was stressed in the Dec. 1 *Journal of the American Medical Association.*

"Approximately 70 per cent of the diabetics in the United States take insulin daily," the article stated. "Many of them would die in a short time if insulin were not available.

"The need for prompt and effective treatment of casualties among this group would become particularly critical in event of a major catastrophe since they would be utterly dependent on a continuing and possibly increased supply of insulin to protect them from acidosis, coma and certain death. Provision for adequate care of diabetics should be a definite factor in any emergency mobilization activity."

VAGINAL APPLICATORS IN THE TREATMENT OF CARCINOMA OF THE CERVIX

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ST. LOUIS

WITH ANY method of radium treatment there is risk of permanent tissue damage as well as risk of under-treatment with lack of tumor control. In applying radium within the vagina in the treatment of cervical cancer there may be injury to the vaginal mucosa, paravaginal and paracervical tissues, bladder or rectum. The use of radium in the vagina is essential, however, for adequate treatment of a tumor due to its tendency to spread toward or into the regions in question. Experience has shown the importance of including the paravaginal tissues in the volume of tissue treated adequately by irradiation or by surgery.

Various methods have been described for radiation treatment. The preliminary use of external irradiation has been advocated by some authors as a routine measure. By that means infection can be decreased and the application of radium made somewhat simpler by virtue of regression in the size of the cervical lesion. It should be noted, however, that the use of a full course of x-ray prior to the application of radium results in some constriction of the vagina. Loss of vaginal diameter may limit the size of the vaginal applicator to be employed and thereby lessen the distance between radium and the treated surface. For these reasons Fletcher[1] has emphasized the importance of beginning treatment with radium.

In clinical practice one must have knowledge of the quantity of radiation required for destruction of cancer, as well as the degree of injury apt to be produced. Expression of total dose in milligram hours of radium, or in terms of total air or surface roentgens for x-ray gives no indication of biologic effect upon tumor or normal tissues. The biologic actions of radiations upon tissues are primarily the result of their ionization and can be expressed in terms of "tissue roentgens" for x-ray and "gamma roentgens" for radium to specify within reasonable limits the effects to be expected.

In order to specify the amount of radiation delivered to a patient, Patterson[2] has selected two points located in critical regions as indicative of the whole dose. One of these points is located in the paracervical triangle as described by Todd[3] in 1938. The critical importance of that region is represented by the fact that over-treatment in the paracervical triangle is the principal factor responsible for cervical necrosis and injury to adjacent normal tissue. For calculating doses in the paracervical triangle, a point designated as "A" has been selected. This is located 2 cm. from the midline of the uterus and 2 cm. from the vaginal mucous membrane of the lateral fornix. The second critical point is located on a line level with point "A," but 5 cm. distant from the cervical canal in the region of the iliac nodes. Little radiation arrives at that point from any method of radium treatment. With the Manchester System Meredith[4] states that doses on the order of 4,400 mg. hours radium are required for delivery of 1,000 gamma roentgen at point "B." For technics employing long radium needles in the paracervical, parametrial and paravaginal tissues there may be relative increase in the doses falling at "B." The point in question is of critical importance because it represents the minimum tumor dose within a region commonly involved by cancer. Fletcher[5] has proposed a technic aimed at increasing the effective dose in the lateral regions of the pelvis by x-ray applied externally without marked increase in the quantity arriving at the cervix, bladder and rectum. It is well known that radium alone can be relied upon to control the local lesion.

Table 1. *Estimated Tolerance Doses for Specified Points in the Pelvis.*

Point	*Estimate Tolerance Dose, Gamma R*
Vaginal Mucosa "M"	20,000-25,000
Cervical Canal	30,000
Rectum	6,000
Bladder	8,000
"A"	8,000

As mentioned before the decision on proper radium dosage or the number of gamma roentgens to be delivered depends on a knowledge of tolerance levels of normal tissues and lethal tumor doses. According to Patterson[2] a lethal tumor dose is believed to be approximately 6,000 to 8,000 gamma roentgens delivered over a period of from seven to ten days. Estimated tolerance levels at various critical points are given in table 1.

Meredith[4] has described the intra-uterine tandems used in the Manchester System of radium treatment. It is important that a "unit" system be employed for loading the tandem, as well as vaginal applicators with tubes of different radium strength. Values given in the Manchester dosage tables apply to radium tubes with external length of from 1.5 to 2.0 cm. and with active lengths ranging from 1.0 to 1.5 cm. In most instances the uterine cavity will accept a tandem of three tubes of the specified length. If a radium tube of 5.0 mg. strength is taken as the unit to be placed in the cervical end of the tandem, then each of the two upper tubes are of twice unit strength, or 10.0 mg. radium each. The lesser amount of radium used in the cervical end of the tandem is intended to avoid over-treatment of the paracervical triangle. If the uterine cavity is of lesser depth and will accommodate only two tubes in tandem, a single unit is placed in the cervical end of the tandem with a tube of twice unit strength located in the upper end. For situations in which only one tube

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can be inserted it is necessary to make that source of twice unit strength.

Ernst[6] has published a complete review of intracavitary radium applicators including a description of one devised by him that employs an expanding mechanism to push multiple vaginal sources laterally into the fornices. At the Radiumhemmet Kottmeier[7] employs the original Stockholm method of so-called trays and sledges for vaginal applications. Lederman[8] uses trays in the

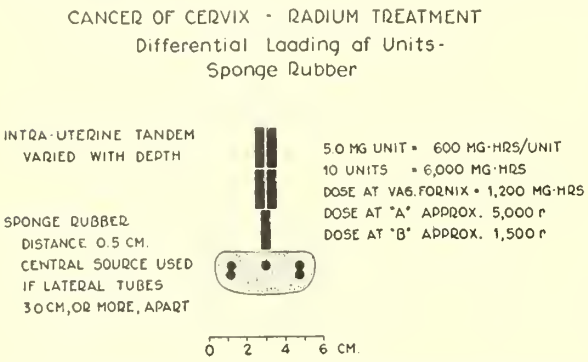


Fig. 1. From Arneson, A. N.: Progress in Gynecology, Meigs and Sturgis, Grune and Stratton, New York. 1950.

work done at the Royal Cancer Hospital. The Manchester System employs ovoids of different equatorial diameters. Size of applicator varies with diameter of the vagina. Equatorial diameters of the ovoids are 2.0 cm., 2.5 cm. and 3.0 cms. One is placed in each lateral vaginal fornix so that the radium tubes are at right angles to the vaginal axis. They are held in apposition by means of a washer, or at distances of 1.0 cm. by means of a spacer. Fletcher[9] has modified the Manchester ovoids by introducing a bar to hold the two ovoids together as a single unit, either in apposition or at distances of 1.0 cm.

At the tumor clinic of the Washington University School of Medicine vaginal applicators have been cut from sponge rubber for each individual patient. One advantage of this method is that radium tubes will remain fixed in the position into which they are placed at the time of treatment, but a serious disadvantage is the unavoidable compression of rubber and the consequent lack of a fixed distance. Tubes are inserted 1.0 cm. from the outer margin of the rubber. After compression the actual distance is from 0.5 cm. to 0.7 cm. Employing a unit of 5.0 mg. radium, an intra-uterine tandem can be prepared according to the Manchester System. Due to the short distance at which the vaginal sources are employed, a tube of only twice unit strength can be placed in each lateral vaginal fornix. If the vaginal sources are 3.0 cm. or more apart, then a single unit can be placed between the two and opposite the cervix. This is shown diagrammatically in figure 1.

With the sponge rubber technic the total dose per 5.0 mg. unit rarely exceeds 600 mg. hours. The radium is applied during the latter half or immediately following the course of x-rays. The treatment is usually divided into two equal sittings given about one week apart, and usually consists of about 120 hours or five days. The total dose at point "A" is about 5,000 gamma roentgens, and at point "B" about 1,500 gamma roentgens. The dose at point "M," or at the mucous membrane of the lateral fornix, is about 1,200 mg. hours from a tube 1.5 cm. active length at a distance of 0.5 cm. That is estimated to represent approximately 24,000 gamma roentgen. Severe mucositis follows an exposure of this type. The mucous membrane often shows a persistent white scar but true radiation necrosis has not occurred as a complication. This would indicate that an average distance greater than 0.5 cm. has prevailed.

During the last year the modified Manchester technic described by Fletcher has been used. Differential loading is shown in figure 2. It should be pointed out that the differential loading specified in the diagram has not been followed precisely. Tubes of radium at the Washington University School of Medicine are of a standard size having external lengths of 17 mm., active lengths of 15 mm., and external diameters of 3 mm. with 0.5 mm. wall thickness platinum. Radium strengths are 5.0, 10.0, 20.0 and 40.0 mg. For that reason, using a unit of 5.0 mg. radium the large and medium ovoids are applied with 20.0 mg. radium

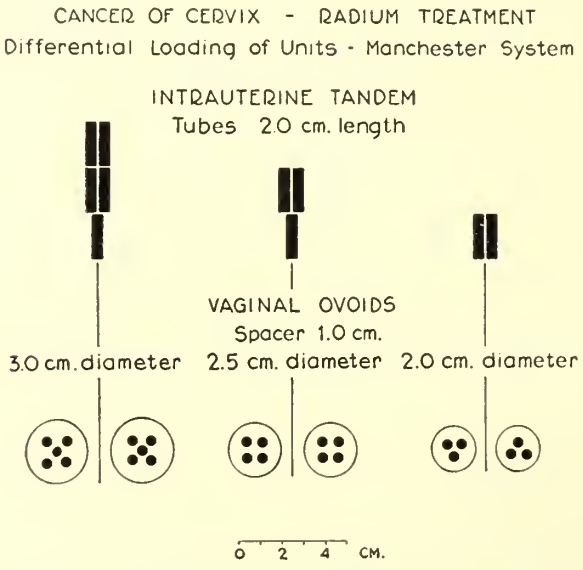


Fig. 2. From Arneson, A. N.: Progress in Gynecology, Meigs and Sturgis, Grune and Stratton, New York. 1950.

tubes in each wing. The small ovoid is often employed with 10.0 mg. radium tubes. The stronger sources of 40.0 mg. are used in the ovoids if a unit strength of 10.0 mg. radium is employed.

Fletcher[9] has calculated doses arriving at particular points for specified numbers of total mg. hours radium radiation for a modified Manchester

technic. With the large ovoid and tandem Fletcher delivers a total dose of approximately 12,000 mg. hours. The total dose to point "M" is approximately 11,000 gamma roentgen. The dose to point "A" is approximately 8,000 gamma roentgen. With the medium tandem and ovoid 9,000 mg. hours total dose is delivered with 7,000 gamma roentgen being delivered to point "A." By using the small ovoid and tandem 6.500 mg. hours radium are used, with a total dose at point "M" being 13,000 gamma roentgen, and to point "A" 5,500 gamma roentgen.

In considering the tolerance doses set up by Patterson it can be seen that the values are not exceeded. The number of mg. hours radiation employed with the ovoid is considerably greater than that which can be used with sponge rubber. That is due to the greater distance at which radium is applied with ovoid. As a result there is a gain in percentage depth dose with more effective irradiation of deeper tissues.

Kottmeier[7] studied dose distribution within the pelvis. He found that the vaginal dose could not be increased for more effective irradiation in the lateral region of the pelvis without increasing risk of intrinsic rectal reactions. Increase in intra-uterine tandem irradiation was found to be a more practical method. The importance of the intra-uterine tandem must be emphasized. In my own experience, however, I have not yet found any marked incidence of rectal reactions following a substantial increase in mg. hours radium applied by ovoids as compared with smaller amounts contributed from sponge rubber applications.

In conclusion, it is believed that the radium treatment of carcinoma of the cervix can be improved by the use of vaginal ovoids. By that means a lethal dose of irradiation can be delivered to a greater volume of tissue with less risk of exceeding the tolerance limits of normal tissues. Furthermore, it is essential that radium dose be expressed in gamma roentgens rather than in such empyrical values as total mg. hours irradiation.

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Postgraduate Review

PRESENT DAY CONCEPTS IN THE ETIOLOGY OF RHEUMATIC FEVER

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ST. LOUIS
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Since the first clinical description of acute rheumatic fever was presented by Sydenham in 1676,[1] the etiology of this disease has remained unknown. As time has passed there has been a steady growth of interest in this most devastating of all illnesses of childhood and, as a result, considerable investigation has been done with the hope of finding its etiologic mechanism. The general pattern of approach to this problem has changed with the years. It is the purpose of this paper to present the following current concepts of rheumatic fever: (1) observations on epidemiology, (2) the influence of heredity, (3) the relationship between rheumatic fever and the beta hemolytic streptococcus, and (4) the antigen-antibody theory.

OBSERVATIONS ON THE EPIDEMIOLOGY OF RHEUMATIC FEVER

In the discussion of the epidemiology of rheumatic fever, it is important to consider Paul's[2] opinion that these studies are hampered by incomplete information. As Wheatley[3] points out, rheumatic fever is generally not a reportable disease so the actual incidence is unknown. Secondly, various surveys which do exist are representative only of particular segments of population and may well not represent the country as a whole. Finally, and perhaps most important of all, this sphere of investigation suffers for the lack of an adequate diagnostic test for rheumatic fever. The diagnosis of this illness in the individual case still is largely based on subjective opinion. Physicians who have had experience with this disease will admit quickly that there is often room for disagreement in the diagnosis.

With this in mind, it is still possible to consider some basic observations which are available.

Determinations of incidence vary in the United States but are considered to be about 1 per cent in the childhood population of school age.[3] The Children's Bureau estimates that there are a half million children in the United States who are handicapped with rheumatic fever and rheumatic heart disease.[3]

From the Department of Pediatrics, Washington University School of Medicine, and the St. Louis Children's Hospital.

This problem is even more evident when mortality figures are noted. The Metropolitan Life Insurance Company's statistics for the causes of death per 100,000 between the ages of 5 and 24 years are shown in table 1.

Table 1. *Leading Fatal Diseases of Young People, Death Rates per 100,000, 1942-1946*

Ages 5-9		*Ages 15-19*	
Cancer	6.6	Rheumatic fever	13.1
Rheumatic fever	6.4	Tuberculosis	12.7
Communicable diseases of childhood	4.8	Cancer	7.5
Ages 10-14		*Ages 20-24*	
Rheumatic fever	9.0	Tuberculosis	27.8
Cancer	5.6	Rheumatic fever	15.6
Appendicitis	3.3	Cancer	8.9

(Cancer here includes leukemia and Hodgkin's disease.)
Adapted from Wheatley: Pediatrics 3:683 (May) 1949.

Wheatley,[3] who presented these figures, states further that rheumatic fever and rheumatic heart disease caused more than 13 per cent of all fatal diseases in the 5 to 24 year age group between the years 1942 and 1946. Actually, however, the death rate for rheumatic fever, has declined through recent decades, probably as a result of the more modern methods for controlling heart failure and the beta hemolytic streptococcus.

Morbidity and mortality figures are also available as a result of the observations of Ash[4] who reported the results of a follow-up study of 331 rheumatic children. At the end of the first year of study almost 10 per cent had died, and 60 per cent had signs of heart disease. At the end of fifteen years, about 37 per cent were dead of rheumatic infection or subacute bacterial endocarditis; 4.5 per cent were limited in activity, and about 60 per cent were leading a normal existence. Ash was able to follow 150 children for twenty years and, of these, 52.6 per cent were dead, and 3.3 per cent were suffering from congestive heart failure.

No significant difference in the incidence has been noted in relation to sex with the exception of the manifestation of chorea which Hedley[5] among others found to be preesent twice as frequently in the female.

There has been no notable racial prevalence.[5]

With relation to climate,[5] rheumatic fever increases steadily in frequency during the winter months to reach its peak incidence in the spring and then falls to its lowest ebb around October.

There is considerable opinion that the disease is more prevalent in a temperate climate than in the warmer parts of the world.[6, 3, 2] Reports show that the percentage of rheumatic heart disease found at necropsy is greater in northern cities than in southern cities.[6] The Surgeon General's report shows widely differing rates of incidence in military installations during World

War II. The overall picture reveals that there was a greater incidence in the North than in the South with the peak incidence in the Rocky Mountain, Great Lakes and Midwest areas with the lowest incidence along the Mexican border and the Gulf Coast.[6]

However, Paul[2] warns that there is a definite incidence of rheumatic fever in the warmer and tropical climates, and there is indication for further investigation in this regard. It may be that the morbidity is lower as a result of the favorable climatic conditions and their relationship to recurrence rate.

Table 2. *Familial Frequency of Rheumatic Fever in Families of Four or Five Children*

	Families	Total Children	Rheumatic Children Number	Per Cent
Both parents negative	22	98	39	39.8
One parent positive	13	55	34	61.8
Both parents positive	3	13	13	100.0

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With regard to socio-economic factors, many workers agree that there is a greater prevalence in the poorer strata of society who live in cowded areas.[5, 6, 7, 8] These findings, however, do not coincide with the observations of Wilson.[9]

THE RELATIONSHIP OF HEREDITY TO RHEUMATIC FEVER

The most extensive and complete reports in this field are the results of the observations of Dr. May Wilson and her associates.[10, 11] Wilson's study includes 112 families who were observed firsthand for periods of time varying from six to twenty years. With few exceptions, every member of these families received physical and fluoroscopic examinations and, as far as was possible, all available records were examined and physicians who had cared for these people were consulted. The families ranged in socio-economic position from dire poverty to middle class comfort.

Besides investigating the influence of heredity, Wilson evaluated the environmental influences including such factors as budget, family size, the number of rooms, dampness, light, heat, food, clothing and the quality of maternal care. In contrast to others,[5, 7, 8] Wilson found there was no significant difference in the familial incidence depending on environment. The possibility of communicability was also studied in various ways, and the conclusion was that there was no evidence to support the theory that rheumatic fever was in any way a communicable disease.

In considering 112 families in which there were rheumatic children, Wilson was unable to obtain definite histories of rheumatic fever in only 28 per cent of the families.[10, 12]

In surveying even further the genetic possibilities, Wilson selected families in which there were four siblings or more since there would be less chance for statistical error in sibling groups of this size. Determination of the heredity histories resulted in the findings as shown in table 2. Apparently, there is a correlation between heredity and the incidence of the disease. By using family pedigrees and genetic formulae, she came to the conclusion that rheumatic fever occurred according to the pattern of a single autosomal recessive gene. If a prediction table were drawn, one could expect the results shown in table 3.

When available clinical material is organized according to this prediction table, the result compares well with the expected outcome.

Wilson emphasizes the importance of considering the factor of penetrance when evaluating the influence of heredity on the incidence of rheumatic fever. She defines penetrance as the percentage of hereditably susceptible individuals who manifest the trait. There may be many factors such as geographic location, environment, and infection which may alter penetrance. It is because of the factor of penetrance that all children who are expected to develop rheumatic fever on the basis of the prediction table do not do so. Of

Table 3. *Prediction Table for Childhood Rheumatism**

Mating	Expected number of rheumatic children: Prior to occurrence of a rheumatic child	Expected number of rheumatic children: Subsequent to occurrence of a rheumatic child
1. Both parents positive	all (nearly)	all
2. One parent positive and other parent's relatives as follows:		
(a) One parent or many siblings positive	one half	one half
(b) One sibling or many aunts and uncles positive	one third	
(c) One aunt or uncle positive	one sixth	
3. Both parents negative but one grandparent of each line positive	one quarter	one quarter
4. Both parents negative and rheumatic fever remote or absent in relatives	unlikely	

* This table is based on the interpretation of a single recessive gene (see text). If a double dominant hypothesis is used for prediction, the numerical values would vary somewhat but the progression from Row 1 in order to Row 4 would remain as in the table.

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a total of forty-four children for each of whom both parents were rheumatic, only thirty-eight, or 86 per cent, developed rheumatic fever instead of the expected 100 per cent. Obviously, much depends on what can be learned concerning the factors which affect penetrance.

THE RELATIONSHIP OF THE BETA HEMOLYTIC STREPTOCOCCUS TO RHEUMATIC FEVER

It can be said that the major share of present day research concerning the possible etiology of rheumatic fever is concerned with the relationship of this disease to the beta hemolytic streptococcus. This relationship has been approached in many ways, all of which, when considered as a whole, provides substantial support for the basic concept that rheumatic fever and the beta hemolytic streptococcus are basically involved.

In the last ten years there has been diminishing support to the idea formerly adhered to that rheumatic fever might be the result of the direct invasion of the streptococcus, and the organism might be cultured from rheumatic lesions. Evidence to substantiate this hypothesis has been meager.

On the other hand, considerable respect is evident for the findings that acute rheumatic fever increases in incidence in close association with epidemics of beta hemolytic streptococcal infection. The repeated opportunities to observe this relationship were provided during the war period between 1940 and 1945, although this had been observed carefully before.[12, 13, 14, 15, 16, 17] It is an old story to almost every physician that acute rheumatic fever frequently is preceded or initiated by an acute beta hemolytic streptococcus infection. In this connection, however, it is important to call attention to the evidence of Kuttner[18] who demonstrated beta hemolytic streptococci in the throats of children who subsequently revealed rises in antistreptolysin O (to be discussed further in this section) and who evidenced no clinical signs of infection at the time. This can explain the old observation that rheumatic fever can occur at times without obvious nasopharyngitis or other clinically apparent infections. Following a three year observation period on this group of rheumatic children, Kuttner found there was not one child who developed rheumatic fever who had escaped a previous streptococcic infection.

Additionally, it is also known that rheumatic fever can occur with heart damage following no apparent subjective complaints sufficient to warrant medical attention. This has been shown by the survey of Levy, Stroud and White.[19] Of 2,500 cases of rheumatic valvular disease rejected on induction physical examinations for the Armed Forces, 72 per cent existed with no history of previous rheumatic fever. With these findings in mind, it is difficult to imagine how many of those individuals involved in an epidemic of beta streptococcic infection actually do develop rheumatic fever subsequently.

Investigation into the relationship of such infection as rubella, ruboela, varicella, influenza and the common cold with rheumatic fever has failed to reveal any influence on the disease.[12, 20, 21] The available evidence seems to indicate an almost specific relationship between the beta hemolytic streptococcus and rheumatic fever.

The importance of this relationship is further

Table 4. *Somatic Antigens of Group A Streptococci*

Somatic Antigens	*Antibodies*	*Specificity*
C carbohydrate	Anti C precipitins	Group specific
Nucleoproteins	Antinucleoproteins	Common to many cocci
T proteins	Anti T agglutinins	Some type specific; some common to several types
M proteins		Type specific
	Protective	in vivo
	Bacteriostatic	in vitro
	Anti M precipitins	in vitro*
	Anti M agglutinins	in vitro*

* With properly absorbed sera.

Courtesy of Lancaster Press, Inc., Swift, H. F.: Ann. Int. Med. 31:719, 1949.

emphasized by the group including Wannamaker, Rammelkamp, Denny and Brink[22, 23] whose work demonstrates that the incidence of rheumatic fever is significantly higher following beta hemolytic streptococcic infections which have not been treated specifically in comparison to those beta hemolytic streptococcic infections which have been treated specifically in comparison to those workers also have shown that the incidence of rheumatic fever is correlated to the efficacy and thoroughness with which the infection is treated.

This leads then to a further consideration of some of the basic characteristics of the beta hemolytic streptococcus. With regard to man, this involves a discussion of the antigenic properties of the microorganism. This subject has been reviewed clearly by Swift.[24]

Beta hemolytic streptococci possess two types of antigens, the somatic and the extracellular, both of which are capable of producing antibodies in man and lower animals. The varieties of these two types of antigenic substances are listed in tables 4 and 5.

Of the somatic antigens, one has been used by Lancefield to divide the beta hemolytic streptococcus into twelve groups. This is the group specific carbohydrate substance "C" which gives a precipitan reaction *in vitro* when combined with its group specific antibody. It has been found that approximately 95 per cent of beta hemolytic streptococcus infections in man are of Group "A" variety. As is possible in other groups, Group "A" hemolytic streptococci can be further divided into serologic types. This is possible by isolation of the "M" substance which is type specific. It can be noted in table 4 that the "M" substance which is protein in nature may be demonstrated in four different ways which include (1) precipitan and

(2) agglutinin reactions *in vitro* with properly absorbed serum, (3) by protective action against such organisms producing the type specific "M" substance *in vitro*, and finally, (4) by the presence of bacteriostatic antibodies *in vivo*. A bacteriostatic antibody is capable of inhibiting the growth of the organism *in vivo*. Other substances such as the "T" substance, also protein in nature, are capable of producing anti-T agglutinins. However, only some of the "T" substances are type specific. Other nuclear proteins may be antigenic in nature and produce antibodies, but these are definitely not type specific.

Table 5. *Extracellular Antigens of Group A Streptococci*

Extracellular Antigens	*Antibodies*
Streptolysin O	Antistreptolysin O
Streptolysin S	Antistreptolysin S
Streptokinase (Fibrinolysin)	Antistreptokinase
Hyaluronidase (Types 4 and 24) (Hyaluronidase precursor?)* all types	Antihyaluronidase
Proteinase	Antiproteinase
Desoxyribonuclease (Dornase)‡	Anti-DORNase‡
Ribonuclease	Antiribonuclease
Erythrogenic toxin	Antitoxin

* The existence of a precursor is assumed because of the frequent stimulation of streptococcal antihyaluronidase following most group A streptococcal infections.

‡ The abbreviation DORN is derived from DesOxyRibose-Nuclease (Tillett et al.).

Courtesy Lancaster Press, Inc.; in part from Swift, H. F.: Ann. Int. Med. 31:721, 1949.

The extracellular antigens elaborated by the group A beta hemolytic streptococci are tabulated in table 5. Of these extracellular antigens, streptolysin S, streptokinase (fibrinolysin) and hyaluronidase are the most frequently considered antigens involved in the investigation of rheumatic fever since these produce the most vigorous antibody response. The intent of these investigations has been not only to show the basic relationship of the organism with the disease, but to develop a diagnostic test for rheumatic fever.

Antifibrinolysin was discovered by Tillet and Garner[25] in 1933. It was shown that fibrinolysin activates a precursor, plasminogen, present in most human sera, to form plasmin, an active fibrinolytic agent. It has been found by several workers[25, 26, 27, 28, 29] that a number of rheumatic patients demonstrate antifibrinolysin levels higher than normal, but it was found that about the same percentage of nonrheumatic individuals demonstrated comparable rises of antifibrinolysin in their sera following streptococcic infection. In addition most workers agree that there is no correlation between the antifibrinolysin level and the severity of the patient's illness.

In 1932, Todd[30, 31] described two types of streptolysin which he called streptolysin "O" and streptolysin "S." Today, streptolysin "S" has not been considered to be of particular value in the investigation of rheumatic fever. On the other hand, the titer of antistreptolysin "O" rises higher after beta hemolytic streptococcic infection in rheumatic patients than in nonrheumatic. This is held to be true if the average of the titers of many rheumatic patients is compared with the average of the titers of many nonrheumatic patients, but it must be remembered again that so far as the individual case is concerned, this test has no diagnostic significance. There is a great overlap if the curves were drawn of the two groups of patients, and it can be shown in rheumatic as well as in nonrheumatic persons that some individuals will have a definite streptococcic infection with no subsequent rise in the antistreptolysin "O" titer.[12, 32, 33, 34, 35]

Taran did serial antostreptolysin "O" determinations on 460 rheumatic children in various phases of the disease, including active as well as quiescent stages. He concluded there was not only a lack of correlation between the phase of the disease and the antibody titer, but there was no particular curve or representative pattern of antistreptolysin "O" titer for a rheumatic child.[36]

One of the most recent and important developments in present day research has to do with the role of collagen or, more accurately, the mesenchyme in rheumatic fever. This subject concerns four substances: (1) hyaluronic acid, hyaluronidase, (3) antihyaluronidase, and (4) the physiologic inhibitor.

Hyaluronic acid is a mucopolysaccharide of the interfibrillar substances of the mesenchyme including such structures as synovial fluid, the umbilical cord, skin, mesenchymal tumors of some types and of the connective tissue.[37] It is further described as a freely dissociated compound not chemically bound to protein. Hyaluronic acid is also produced by some strains of Group A and Group C beta hemolytic streptococci.[38, 39] As far as is now known, these are the only microorganisms capable of this property.

Hyaluronidase is an enzyme also present in the human. A readily available commercial source is from animal testicular extracts. Basically, the known function of this enzyme is to break down the hyaluronic acid in connective tissue by depolymerization.[37] Hyaluronidase for this reason has a widespread use in clinical medicine for the facilitation of subcutaneous administration of fluids, anesthetics, medications and dyes for urography.[40]

Pike[39] has studied some of the capsulated strains of beta hemolytic streptococci which are known to produce hyaluronic acid and some of the noncapsulated strains which are capable of producing hyaluronidase. He has shown that some of the hyaluronic acid producing capsulated strains when carried through a series of cultures will lose their tendency to elaborate hyaluronic acid. Apparently, hyaluronic acid is bound up with the capsule which also tends to disappear. Following this occurrence, the same strain will then begin producing hyaluronidase. Therefore, some strains of beta hemolytic streptococci are

capable of producing both hyaluronic acid and hyaluronidase.

Sallman and Birkeland[41] studied the relationship between the production of hyaluronidase by beta hemolytic streptococci and the virulence of the organisms. They have shown that chick embryos infected with hyaluronidase elaborating organisms showed a much greater mortality than those chick embryos which were infected with strains of hemolytic streptococci which did not produce hyaluronidase. When hyaluronidase was added to the hyaluronidase producing hemolytic streptococcic infected chick embryos, the mortality was reduced.

Ragan and Meyer[38] point out some of the significance of this when one considers rheumatic fever as a disease which is localized primarily in its disease process to the connective tissue and particularly to the interfibrillary material which contains hyaluronic acid. The fact that beta hemolytic streptococci, which may produce either hyaluronic acid or hyaluronidase or both, is the organism which is fairly universally accepted as being in some way associated with this disease has opened a field of much speculation.

As has been mentioned previously, streptococcal hyaluronidase is capable of stimulating antibody response (antihyaluronidase) in the human following infection with streptococci. It must be understood that this antibody, antihyaluronidase, is specific for streptococcal hyaluronidase and not to hyaluronidase of other sources. It happens that of all the extracellular antigens, streptococcic hyaluronidase is the strongest antigenic substance of all. Harris[42a, 42b] studied the antibodies to streptococcal hyaluronidase in normal individuals in various age groups. He found an appreciable mean titer in newborn infants which apparently was transmitted by the mother. In older infants and young children there was a fall to the lowest level. Then, in older children and normal young adults there was a rise representing, no doubt, the effects of streptococcal infections. Harris also studied the titer of antibodies to streptococcal hyaluronidase in clinical groups. There was little effect on the mean titer during the early stages of an acute streptococcic infection such as scarlet fever. However, in the later stages of the disease during the convalescent period there was a definite increase in the mean titer. In a group of children with acute rheumatic fever, Harris found the mean titer to be the highest by far of any other group studied. He also studied a group of children with quiescent rheumatic fever, the mean titer of which was about the same as for normal children. A similar study was done by Quinn.[43a, 43b]

Certainly, there is no argument that a definite and significant difference exists in the titers of rheumatic children when groups are compared. Again, unfortunately, the geometric mean titer is of much less significance when the individual case is considered. It was found that the antihyaluronidase titer, like the other antibody titres, bore no specific correlation between the severity of the disease and the degree of rise in the titer. Harris points out, however, that 43 per cent of the patients with active rheumatic fever showed antihyaluronidase titers which exceeded the titers found in 98 per cent of the patients convalescing from scarlet fever. Therefore, in a group of individuals whose antihyaluronidase titers are in the range of that 43 per cent, one may say with little chance of error those individuals have rheumatic fever.

With such antibody reactions occurring in rheumatic patients, the question raised originally by Coburn[44] many years previously of a possible specific effect of salicylates on rheumatic fever has again been brought to light. Salicylates apparently inhibit the virulence enhancing power of hyaluronidase of the chick embryo.[41] Guerra[45] described an inhibitory effect by salicylates on the spreading of actions of hyaluronidase. Harris,[46] however, in repeating the experiment under conditions which he considered to be more valid, was unable to support this idea.

Dorfman[47] has described another substance related to hyaluronidase which he describes as "psysiologic inhibitor." This substance is capable of blocking various hyaluronidases, is not specific to any one, and is to be distinguished from the streptococcic hyaluronidase antibody.

Dorfman believes it is not the streptococcus hyaluronidase which is directly involved with rheumatic fever. He gives three reasons: (1) some strains of streptococci do not produce the enzyme, (2) the degree of rheumatic reaction does not parallel the height of the streptococcus invasion, (3) hyaluronidase is produced by many microorganisms which have never been associated with rheumatic fever. Dorfman postulates that, if hyaluronidase is connected with the pathogenesis of rheumatic fever, some type of mechanism other than the direct action of streptococcic hyaluronidase on connective tissue must be implicated. He considers it significant that while many organisms are capable of producing hyaluronidase, only the streptococcus is capable of producing hyaluronic acid. In attempting to formulate a hypothesis to include these observations, Dorfman suggests, ". . . the presence of hyaluronic acid in the capsule of the streptococcus may insult the body in some way so as to bring forth a defense reaction aimed at the destruction of hyaluronic acid. Since the hyaluronic acid of the connective tissue of the organism is chemically similar to that produced by the streptococcus, such a reaction might result in destruction of connective tissue. Such reaction could possibly be an overproduction of intrinsic hyaluronidase or a repression of formation of the 'physiologic inhib-

itor.'" This was found to be so in several rheumatic fever patients. The low levels of physiologic inhibitor occurred in the most active phase of the disease. With clinical recovery the inhibitor increased in its level and assumed a normal level with recovery. Dorfman quotes the work of Grais and Glick[48] who obtained similar findings in their rheumatic fever patients being treated with ACTH. Dorfman and Moses [49] repeated the work of Grais and Glick and found that with ACTH there was a drop in the inhibitor with a decrease in the erythrocyte sedimentation rate and symptoms. With cessation of the ACTH, there was a return of the rheumatic activity and a rise in the inhibitor level. Dorfman suggests that rather than the inhibitor reflecting the degree of antibody response to hyaluronic acid, it may be that the inhibitor may reflect the effect of adrenal hormones on changing the state of connective tissue, so that it no longer reacts to the precipitating stimuli in the diseases of connective tissue. In other words, the inhibitor may reflect the state of connective tissue and may represent some substance which appears with destruction of connective tissue. Grais and Glick[50] recently have shown that the inhibitor may rise with many different diseases, and there is nothing specific about the rise of the inhibitor in rheumatic fever. From these observations, therefore, the significance of the physiologic inhibitor remains unknown. Yet, increasing knowledge of this substance gives promise of adding much to the understanding of the relationship between the beta hemolytic streptococcus and rheumatic fever.

One may now consider another phase of investigation into the pathogenesis of rheumatic fever which has to do with the production of Aschoff-like lesions by beta hemolytic streptococci. In attempting to determine in what way the beta hemolytic streptococcus acts differently in rheumatic individuals, Murphy and Swift[51] performed an experiment based on the following observations:

(1) An individual may have repeated infections of Group A beta hemolytic streptococci each different from the other, and each infection may manifest itself in a somewhat different way from the other.

(2) The same strain of beta hemolytic streptococcus in the same epidemic may manifest itself differently in different individuals.

(3) Generally with repeated infections of beta hemolytic streptococci there is a "retuning" of the patient's tissues after each infection with a somewhat different response to subsequent infection. This results in the progressively increasing ability of the body to limit beta hemolytic streptococcic infections or to focalize them. This is demonstrated by the diffuse character of response of the infant to such infections, in contrast to the more acute course and focalized infection found in the adult.

Murphy and Swift inoculated the skin of rabbits with different strains of Group A beta hemolytic streptococci in sublethal doses at varying intervals, each of several months duration, and, occasionally, reinoculated the same strain. This was done for periods of time up to two and one half years. After several focal infections, some rabbits sickened and died, but many recovered. In the hearts of those that died and those that were sacrificed while still sick, heart lesions resembling rheumatic fever lesions occurred. Neither bacteria nor inclusion bodies were seen in these cardiac lesions. It is interesting, moreover, that a distinct correlation was found between these lesions and enlargement of the adrenal cortex. In a more recent communication, Murphy and Swift[52] demonstrate with photomicrographs the close similarity of lesions in the rabbit heart produced in the foregoing manner and the lesions found in pathologic material of human cases of rheumatic fever. Swift believes that there is one basic lesion of the heart and blood vessels affected by rheumatic fever, and that is the granulomatous lesion, the Aschoff body. The authors compare these lesions to those produced by foreign protein injection. The latter lesion as described by Murphy and Swift is a periarteritis which is not typical of the Aschoff body.

THE ANTIGEN-ANTIBODY THEORY IN RELATION TO THE PATHOGENESIS OF RHEUMATIC FEVER

Interest in the possibility of an antigen-antibody mechanism in association with rheumatic fever grew when it became apparent in the opinion of many observers that direct bacterial invasion could not alone account for the lesions of rheumatic fever. Although much of the work already mentioned with regard to the beta hemolytic streptococcus can come under the heading of allergic phenomena, many workers have approached the pathogenesis of rheumatic fever from the immunologic standpoint without including the beta hemolytic streptococcus at all.

Although interest in the antigen-antibody theory has been evident since 1902, it was Rich and Gregory[53, 54, 55, 56, 57] who stimulated renewed attention in recent years. These workers produced lesions in the hearts of rabbits following the single injection of foreign serum protein. Hawn and Janeway[58] showed the correlation between the fraction of the serum protein used and the site of the resultant lesion. Serum albumin produced lesions almost entirely confined to the heart while serum gamma globulin produced glomerular lesions mainly, although some few lesions were found in the heart. Moore et al.,[59] using egg albumin, were able to produce similar cardiac lesions in mice. McKeown,[60] attempting

to reproduce Rich's work, used repeated injections and found lesions which she had described carefully and compared favorably with those of rheumatic fever in humans. McKeown also pointed out that most of the valvular lesions involved the mitral valve with a few lesions involving the aortic and tricuspid valves and with no lesions at all of the pulmonary valve. Ehrich et al.[61] as well as Moore et al.[62, 63] produced the same type of lesion, using the similar basic technic of injecting foreign protein into animals. However, these workers share the opinion of Murphy and Swift that while the lesions artifically produced in animals are similar to those of human rheumatic fever, there is a decided difference.

Some investigators have attempted to show that these lesions were allergic phenomena by trying to interfere with the process with the introduction of various substances. It seems that antihistaminics do not alter the incidence of the lesions.[64, 65, 66, 67] Salicylates also are not effective in this regard.[64, 67] Dammin and Bukantz[68] as well as Schwab[69] found nitrogen mustard and x-radiation definitely interfered with the production of these lesions and showed that specific antibody formation was impaired.

In what way ACTH plays a part in the antigen-antibody reaction is unknown at this time, but at the same time the effect of this hormone on the antigen-antibody reaction is of great importance especially with regard to rheumatic fever since this drug has come into such wide usage for the treatment of this disease. It has been shown that rabbits treated in the manner described by Rich and Gregory with one dose of horse serum and who were also given ACTH revealed a marked diminution of the cardiac and vascular lesions.[70, 71, 72] Just how this correlates with the beneficial effect of ACTH and cortisone on acute rheumatic fever[73, 74] remains a matter of conjecture. Fischel[75] has shown that ACTH does not alter the Arthus phenomenon or anaphylaxis or other manifestations of the union of antigen with antibody, nor does ACTH stimulate an anamnestic response. According to Fischel's work, the area in which the hormone does show an influence is by the inhibition of antibody production. Cortisone apparently has a similar effect. Should rheumatic fever prove to be the result of an antigen-antibody reaction, the effect of these hormones on antibody production might be the mechanism by which these substances exert a beneficial effect.

Another intriguing point for speculation is advanced by Ragan et al.[76] who discuss the known delaying effect of ACTH and cortisone on wound healing. In other words, these hormones decrease the reactivity of connective tissue to trauma. "It is suggested that in diseases involving mesenchymal tissue, these tissues are traumatized by some unknown agent. When hyperadrenalism is induced, the mesenchymal tissues are unable to respond to trauma, and a remission of symptoms resulting from the response of these particular tissues to such trauma follows."

In recent years, a somewhat different approach has been utilized by Cavelti [77, 78, 79, 80, 81, 82, 83] in his investigation of glomerulonephritis and rheumatic fever. Cavelti's work with rheumatic fever followed his findings in the artificial production of glomerulonephritis. Cavelti postulates that when an individual is invaded with beta hemolytic streptococci there may be some alteration of the kidney tissue by the organism which renders that kidney tissue antigenic. What follows is the production of antibodies to the host kidney tissue. Antibodies so formed are known as autoantibodies which are then capable of reacting with the kidney itself and in this way produce nephritis. In addition, Cavelti suggests the mechanism may be further explained by the concept of haptens, represented in this case by the kidney, being attached to the "carrier" of protein nature, the beta hemolytic streptococci or some of its products. Cavelti has demonstrated the production of autoantibodies by the *in vitro* test of the collodion particle technic. When collodion particles are coated with homologous kidney tissue extract and brought into contact with the sera of an animal in whom immunization has been carried out with a beta hemolytic streptococcic-kidney extract combination, agglutination of the particles takes place. This collodion particle test has been applied to human nephritis with fair results.[84]

Cavelti has applied the same principle to rheumatic fever, believing the two illnesses to be related and part of the so-called "collagen diseases." Cavelti subjected animals to the immunization procedure, the immunizations being repeated injections of killed beta hemolytic streptococci and homologous heart or connective tissue combined. The collodion particle tests yielded interesting results. The highest titers were obtained on the seventh day after the last injection and were much higher after the second or third schedule of injections which were ten doses in ten days. Definite positive results were obtained when either homologous heart tissue or homologous subcutaneous connective tissue were combined with killed hemolytic streptococci. Skeletal muscles combined with the streptococci gave positive results also. On the other hand, killed streptococci alone, rat heart alone, and rat subcutaneous connective tissue alone yielded almost entirely negative results with the collodion particle technic.

Changes also were observed on the valves and less frequently in the myocardium. In Cavelti's opinion, the changes are suggestive of those found

in the human rheumatic heart. No mention is made of any correlation or lack thereof between the height of the titer and the degree of anatomic involvement. Cavelti noted the mitral valves to be most frequently involved, the aortic infrequently, and rarely were the tricuspid or pulmonary valves involved.

Cavelti also used human heart coated collodion particles in testing the sera of thirty-six patients with active rheumatic fever.[85] The titers in terms of serum dilution varied from 1:40 to 1:320. There were strong positive reactions in twenty patients, weak but definitely positive reactions in seven patients and doubtful or negative reactions in nine patients. The antibody seemed to disappear when the process became inactive. He used four human hearts in preparing the antigen coated collodion particles. Twelve normal controls were all completely negative. Of eighty-four patients with various diseases, one was weakly positive (a patient with chronic myeloid leukemia), and three were doubtfully positive. The remainder were entirely negative.

The results of further investigation in the field of autoantibodies may be most revealing. It must be pointed out, however, investigative work in this field involved many technical difficulties.

DISCUSSION

The foregoing material has been presented with the intent to cover in a simplified way the present-day concepts in the etiology of rheumatic fever. None of these concepts has been presented in complete detail and space does not permit the massive bibliography which might be assembled for definitive reference.

It is safe to say that at present no single concept in the etiology of rheumatic fever is the complete answer to this problem. Yet in each of these fields of investigation, there seems to be some basic elemental truth. From these one might postulate that the hypothetical rheumatic individual is one who was unfortunate enough to inherit a trait which renders him susceptible to various factors in his environment. These factors might include such things as geographical location, economic status, living conditions, infections, and so forth, but whatever these may be, the one essential factor seems to be infection by the beta hemolytic streptococcus. What happens between the time the hemolytic streptococcus invades the susceptible individual and the time when he manifests acute rheumatic fever, as it is recognized clinically today, remains the essential and vitally important mystery. It may be that this organism with its peculiar and unique ability to elaborate either hyaluronic acid and hyaluronidase or both brings about a change in the mesenchyme of this unfortunate individual and the resultant changes, with time, manifest themselves as the active crippling disease. On the other hand, it is also possible that the beta hemolytic streptococcus has a unique capacity to alter certain tissues of the body in such a manner that they become antigenic and commence a relentless chain of damaging antigen-antibody reaction. It may be further possible that the mechanism of connective tissue destruction by the beta hemolytic streptococcus is in itself an antigen-antibody reaction.

At any rate, in the opinion of many, the etiology of rheumatic fever lies somewhere between the time of entry of beta hemolytic streptococci into the body and the time when connective tissue changes begin. This is the huge void in knowledge which remains to be filled in.

CONCLUSIONS

A summary of the results of recent investigative efforts into the pathogenesis of rheumatic fever has been presented.

Although a great amount of information has been assembled, the etiology of this disease remains unknown.

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AMERICANS RECEIVE MORE AND BETTER MEDICAL CARE TODAY

Americans are getting more and better medical care today than they did twenty years ago for the same proportion of their budget, according to a report from the Bureau of Medical Economic Reserach of the American Medical Association.

During the last twenty years, the proportion of the consumer's budget spent for medical care has fluctuated around 4 per cent, according to U. S. Department of Commerce data; in 1945 it was 4.2 per cent, and in 1950, 4.4 per cent.

"The rise between 1945 and 1950 larely reflects wartime conditions in 1945, the tremendous increase in the number of births in the postwar years, the rapid rise in hospital room rates and the increased use of hospitals," Frank G. Dickinson, Ph.D., director of the bureau, stated.

During the last twenty years, the report pointed out, the physicians' share of the medical care dollar dropped 12 per cent, from 31.8 cents to 28.1 cents, while the hospitals' share rose 66 per cent, from 13.9 cents to 23.1 cents.

A typical 1950 factory worker could purchase almost twice as much medical care with a week's salary as he could have during 1935-1939, Dr. Dickinson said. Only 53 per cent of a week's wages in 1950 was necessary to purchase the same amount of physicians' services as a whole week's pay in 1935-1939.

The average weekly earnings of production workers in manufacturing industries in 1950 were $59.33, as compared with $22.42 during 1935-1939, according to the U. S. Department of Labor. Using 1935-1939 as the base period of 100, the earning index was 265 in 1950. The index of physicians' fees stood at 140 in 1950; 140 equals 53 per cent of 265.

The report stressed the fact that the amount of services rendered by the average physician was from one third to one half times greater in 1950 than during 1935-1939. This was made possible through introduction of wonder drugs, improved transportation, the increasing proportion of patients seen in the hospital and office, and other increases in technological efficiency.

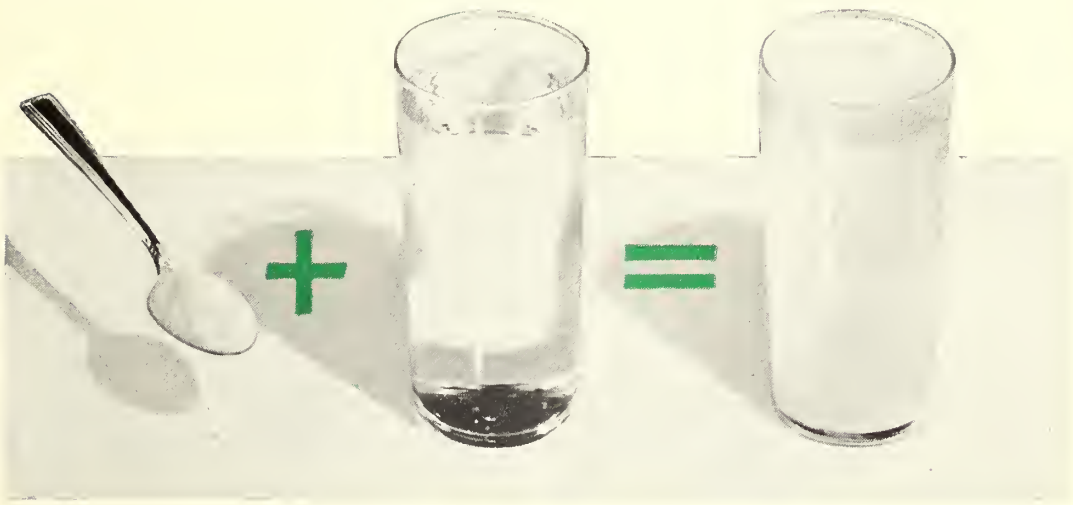
"On the whole, these government price indexes indicate that the American people in 1950 were receiving relatively more medical care for their money than they were in 1935-1939," Dr. Dickinson stated.

"But the great improvements in the quality of medical care, which have made a given amount of services so much more effective today, can never be measured by quantity indexes.

"Such tremendous strides in our health progress as the sharp reduction in the number of maternal deaths per 1,000 live births from about five in 1935-1939 to less than one in 1950 and the jump in life expectancy at birth from 59.5 years in 1930 to more than 68 years in 1950 are not measured by indexes of the quantity of medical care."

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1. Perloff, Wm. H. (1951), Treatment of the Menopause. II. American J. Obst. & Gynec., 61:670, March.

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Case Reports

MUCINOUS CARCINOMA OF THE RECTUM ASSOCIATED WITH ANORECTAL FISTULA

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THERE IS NO concrete evidence to prove that a carcinoma of the rectum could originate in a benign anorectal fistula. However, there appears in the literature an increasing number of reported cases in which carcinoma is associated with or is discovered subsequent to a fistula-in-ano.

To demonstrate histologically the process of a benign fistula metamorphasising into a malignant invasive neoplasm is impossible. Lynch and Gross[8] made many attempts at careful examination of the excised tissue from their cases and failed to prove that the fistula was the cause of the cancer. Fitchet,[7] likewise, could not prove a definite connection. Ewing[6] quoting Kraske states, "There is no satisfactory evidence that carcinoma develops in tissues altered by hemorrhoids, fissure, fistula or cicatrices."

Buie and Brust,[1] in 1933, reported on thirty-four cases of malignant anal neoplasms. Eight of their cases were associated with anal fistula. They presented no proof that the fistula acted as an etiologic agent. While all these investigators have not been able to prove the connection between carcinoma and fistula, the mere reporting of more and more cases of this condition seems to support the idea that "although we can not prove fistula-in-ano as an etiologic agent we, nevertheless, believe it to be."

Rosser, on the other hand, is firmly convinced that fistula-in-ano plays a role in the etiology of carcinoma of the rectum. Rosser lays down three criteria by which proof of malignancy developing from anal fistula may be made: first, that the history of fistula should be sufficiently long to exclude the reasonable possibility that the carcinoma could have existed prior to the fistula; second, no tumor mass should be present in the rectum nor the anal canal unless such tumor be definitely secondary, and third, the primary opening of the fistula should be in an anal crypt or ulcer and not in malignant tissue.

In the *American Journal of Surgery* Isaac Skir[11] reviews the literature on this subject in a rather complete manner. He offers no proof that the malignant tumor grows from the benign fistula. He is of the opinion, however, that whether or not these reported cases do represent malignant degeneration in a fistulous tract it is safest to eradicate any and all fistulous tracts as early and as completely as possible. Three of his reported cases are of the mucinous type.

In 1948 in the *British Journal of Surgery*, Doran[1] also reviews the pertinent literature on this subject and infers that the proof of malignancy in fistula is quite definite. In fact, when one reads this short paper including a case report one gets the impression that the fifty-odd cases reported in the literature represent definite proof that carcinoma develops in chronic anal fistula.

In all the literature there are a little more than fifty-odd cases of carcinoma associated with fistula-in-ano. About a third of these reported cases are of the mucinous type cancer and the remaining cases are examples of squamous cell type.

In 1948 in the *American Journal of Surgery* Hill and Smith discussed colloid (mucinous) carcinoma as it occurs in the sigmoid, rectum, anus and perianal tissues. In thirty-eight patients with this disease in one of these locations, four represented patients in whom the mucinous type of malignancy arose in long standing fistula. In at least three of these four cases the authors seemed satisfied that the carcinoma developed in the old fistulas.

We are of the opinion that the "irritation factor" of anal fistula plays a definite role in the etiology of carcinoma of the rectum. To support the contention that malignancy can arise in a fistula-in-ano, the findings in two cases of mucinous carcinoma which occurred in patients subsequent to fistula-in-ano are reported. These two cases are presented in support of our belief because we, in each case, were the operating surgeons originally, and, after performing fistulectomy, followed the cases to the development of the malignant condition.

CASE REPORT

Case 1. (J.W.T.) A 67 year old, white male was first seen in 1945. His rectal history revealed that he had had trouble for years. He had had a fistulectomy before and the present complaint was a recurrence of the fistula. Examination revealed a large fistulous tract situated in the midline between the tip of the coccyx and the anus. The tract was surrounded by dense, old scar tissue. There was an additional sinus out over the left buttock and several smaller sinuses ramifying around the posterior anal wall. At operation all of the tracts were carefully excised and the external sphincter was severed in the midline in order to eradicate the primary or internal opening. The excised tissue was sent to the pathologist for microscopic analysis. The report follows: "The microscopic sections show no malignancy. The picture is that of a nonspecific chronic inflammation with the formation of large amounts of granulation tissue. The small piece which was sectioned separately shows colon mucosa in which there is marked scarring and chronic inflammatory changes."

Four years later (1949) this patient returned suffering with a large perirectal abscess. His interim history was without note. His complaint was of a week or ten days' duration. Subsequent to draining this abscess, when the inflammation subsided, a suspicion

was entertained that malignant degeneration might be present. On digital and proctoscopic examination at the site of the old primary opening (midline posterior) was an indurated raised, fixed irregular mass. Biopsies were taken and a definite diagnosis of carcinoma was made. Histologically the report was that of mucinous carcinoma of the rectum located at the dentate line. A combined one stage abdominoperineal excision of the rectum was carried out as the only procedure promising a cure. As of December 30, 1950, the patient was alive and well without evidence of recurrence.

This case certainly conforms to Rosser's three criteria and it is certainly difficult to believe that the preceding anal fistula had no connection with the mucinous carcinoma which was discovered four years later.

Case 2. (L.J.L.) A 60 year old male was first seen about two years ago. His chief complaint at that time was drainage of pus per rectum which began after his local medical doctor gave injections for hemorrhoids. On digital and proctoscopic examination the patient was found to have a horseshoe type fistula. The primary opening was in the posterior midline at the dentate margin. The secondary opening was also in the midline posteriorly. A cordlike tract could be palpated surrounding the posterior half circumference of the anus. The mucosa of the rectum and sigmoid to 25 cm. was of no note.

At the operation an attempt to cure this patient was carried out by excising the primary tract and severing the sphincter muscle. The wings of the fistula were laid open. When this was done there were found several secondary tracts branching into the deeper tissues. These were probed and also widely opened. Scrapings of the bases of the tracts were saved and injected into a guinea pig with a negative result. The tract and several pieces of tissue were sent to the pathologist for microscopic examination. The pathologist's report was chronic inflammatory tissue reaction with no evidence of malignancy.

The right wing of the fistula failed to heal and the patient was again operated upon and the tract was reexplored and some more tracts found and opened widely. Biopsies of this tissue did not show any evidence of malignancy. The tract failed to heal and persisted in draining thick purulent material. At intervals the patient was examined to determine the clinical course of the chronic drainage. The patient was advised to return to the hospital for more surgery and biopsies but he refused. Over a two year period he was followed and continually refused to be hospitalized. About two years after the primary fistulectomy the patient himself observed the drainage was becoming more profuse and was changing to a mucus-type of drainage. He was advised that the change in the type drainage was a significant one and might be serious. He finally consented to go back into the hospital. His anorectum was now deformed by scar tissue and two draining openings in the mass of scar. Palpation revealed a hard, fixed mass on the right of the midline of the anus. Biopsies revealed mucous adenocarcinoma. A Miles type of resection was carried out but it was impossible to completely resect the involved pararectal tissues of the right side of the rectum in spite of a wide dissection. The perineal wound still drains and refuses to heal. Although the patient has gained weight and looks and feels well, he still harbors the mucous carcinoma which was impossible to remove completely.

It is not the purpose of this paper to elaborate on the many theories in the causation of tumor growth. The "irritation factor" as a stimulus in the development of malignant growth in uterine, pulmonary, gastric and skin tissue is well known. It could be postulated that the cells of the tissue of the anorectum in an attempt to wall off the products of inflammation of a chronic anal fistula begin to multiply in "self-defense." Once this stimulus is started (at least to our knowledge) it is not self-controllable. The proof of the connection between inflammation and malignancy is difficult but it is not inconceivable that the key to the puzzle may be in the physiochemical reaction which ensues when healthy mucous producing cells are bathed in the products of dead tissue.

SUMMARY

Concrete proof is lacking in the indictment of inflammatory fistulae as the etiologic agent in the development of mucous adenocarcinoma of the rectum. Many investigators believe, nevertheless, that there is a definite connection between the two entities. Although we cannot unearth any direct proof, we are of the opinion that the "irritation-factor" of the products of inflammation is the stimulus for the development of the carcinoma. We herein submit two cases which we believe are mucous adenocarcinomata which developed from anorectal fistulae.

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NEW EDITION OF HOSPITAL CODING SYSTEM READY SOON

The fourth, revised edition of the Standard Nomenclature of Diseases and Operations will be made available to hospitals on Jan. 2, 1952, it was announced today by the American Medical Association.

The Standard Nomenclature has become the standard and most acceptable system for the diagnostic coding of hospital records for more than 70 per cent of the country's hospitals.

Included in the new edition will be an appendix cross reference of the standard code numbers and the code numbers of the International Statistical Classification of Diseases, Injuries and Causes of Death. This latter system is now accepted on a world basis for statistical analyses by the countries participating in the World Health Organization.

SPONTANEOUS CHOLECYSTODUODENAL FISTULA

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DEFECATION OF a large gallstone is a rather awe inspiring event both to the patient and physician alike. The following case illustrates this point and serves to bring to attention the subject of internal biliary fistula.

CASE REPORT

Mrs. B. L. L., aged 52, obese white farm woman, first noticed upper abdominal colic type pain about noon, April 27. This became quite persistent, the pains occurring every one to two minutes, radiating at times to the back, but usually radiating in a clockwise fashion from the right upper quadrant of the abdomen. That evening there was a large emesis consisting of about 1,000 cc. brownish yellow fluid. Subsequently vomiting was periodic but less productive. The cramps continued most of the night except for thirty minutes during which time she was able to sleep. About noon the following day, twenty-four hours after the onset, a particularly severe adbominal cramp occurred and a few minutes later a bowel movement occurred. In her own words, "it banged against the bottom of the night jar like a rock." On investigation she found the stool to be, "a plain stone covered with a little blood." Feeling uneasy and worn out, she sought medical aid and advice.

When first seen at her home she appeared moderately ill, complaining of generalized weakness and epigastric soreness. The stool in question was found to be a large egg shaped calculus which measured 40 mm. in length and 26 mm. in diameter. Imbedded in it were several faceted stones. Additional physical findings were moderate epigastric tenderness, temperature 99 F., slight tympanites and some recent anal bleeding. Blood pressure was 210/100 with aortic and mitral systolic murmurs. She was given 600,000 units penicillin and started on sulfasuxidine orally.

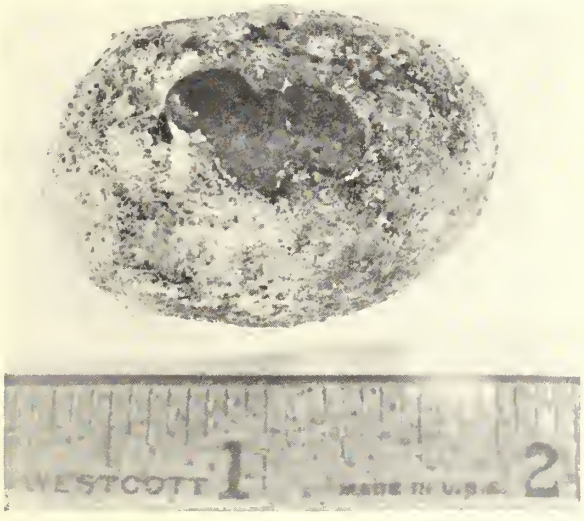


Fig. 1. Gallstones passed per rectum.

Improvement was rapid and in two days she was able to come to the office. On May 2, four days after the onset of the acute illness, x-ray studies utilizing a radio-opaque meal revealed a fistula extending from the first portion of the duodenum. There were no additional gallstones noted. Additional studies forty days after passage of the gallstone failed to reveal the fistula. Except for some mild epigastric soreness the patient felt well at that time.

An unusual feature developed twenty-five days after passage of the gallstone, when her husband informed me that she had passed two more stones. Two days later the patient brought in three additional stones which she professed to have passed per rectum with some difficulty. These were examined and found to be plain Missouri ground rocks. A comparison x-ray with the original gallstone readily differentiated them. When confronted with this evidence she suggested the stones might have been inserted in the rectum while she slept (either by herself or her husband). At any rate this helpful bit of information was offered and the husband vouched that the additional stones had actually been passed. Psychiatric aspects of this case are receiving consideration.



Fig. 2. Arrow points to cholecystoduodenal fistula.

This patient had been seen in the office several times prior to passage of the gallstone. Treatment was directed primarily for hypertension and obesity. On one occasion she mentioned having relieved some upper abdominal distress by taking Sloan's liniment internally. Closer questioning, in view of what transpired, revealed mild symptoms attributable to gallbladder disease of about seven years duration.

Internal biliary fistulae are not encountered frequently in individual practices but are seen with some regularity on large surgical services. Five cases were encountered among 15,677 operative cases on Surgical Section A in the Hospital of the University of Pennsylvania from September 1, 1922, to September 1, 1939.[1] In only one instance the diagnosis was made preoperatively.

Numerous types of communications have been recorded and, according to Eliason and Stevens,[1] include those between the biliary tree and: (1) esophagus, stomach, duodenum, jejunum, ileum, appendix and colon; (2) bronchi, pericardium and pleura; (3) urinary tract, fallopian tubes, uterus, vagina and ovarian cyst; (4) more than

one viscus, e.g., cholecystoduodenalcolic fistula. Cholecystoduodenal fistula is the most frequently occurring type acording to Dean, and Judd and Burden.[2]

As regards pathogenesis it is obvious that a biliary fistula can result only from pathologic processes involving the biliary tree extending outward to adjacent viscera, or just the reverse in which a pathologic process extends into the

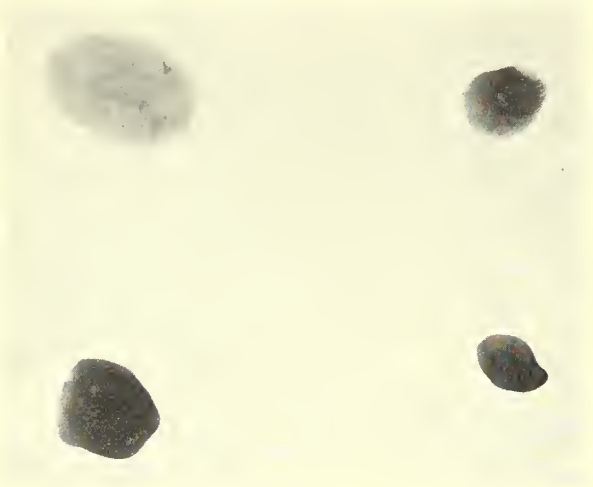


Fig. 3. X-ray comparison of gallstone, upper left, with three earth stones professed to have been passed.

biliary tree. The case reported illustrates ulceration from within the gallbladder finally involving the duodenum with eventual communication established. Peptic ulcers or malignancies occasionally extend into the biliary tree, but this is not common.[3]

The diagnosis of internal biliary fistula is not often made preoperatively unless: (1) a gallstone which is obviously too large to have passed through the ampulla of Vater is defecated or vomited; (2) x-ray studies show air or gas in the biliary tree,[3,7,10] or barium meal in the fistula, or an ileus producing gallstone in the bowel.[4]

In most instances the diagnosis is established at the operating table. In Judd and Burden's 153 cases of internal biliary fistula reviewed at the Mayo Clinic the preoperative diagnosis was established only twice.[5]

The reason for the failure in diagnosis probably rests in the fact that if symptoms are present they are usually more compatible with a diagnosis of cholecystitis, cholangitis, hepatitis or peptic ulcer.[3] Rigler[4] stresses the importance of accurate diagnosis of bowel obstructing lesions since a small percentage are gallstones. This type obstruction demands surgical intervention. Suction therapy is hazardous and creates a false sense of security. The diameter of obstructing gallstones is usually about 25 mm. or more[4] and the obstruction most frequently occurs in the ileum.

The literature indicates that the main complications of internal biliary fistula are gallstone ileus and biliary tract infections. The treatment regarding gallstone ileus has been mentioned. Infection of the biliary tract is unlikely to occur in the cholecystoduodenal type since the duodenal contents are relatively sterile.[3] However, ascending infection is a definite danger in the cholecystocolic type and the fistula should be taken down. Cholecystectomy and exploration of the bile ducts should be done as part of this procedure. If gallstones remain after formation of any type biliary fistula they should be removed if at all possible.

In the case presented, the question arises what to do with the fistula. The offending stone has been passed and the fistula, if patent, cannot now be visualized. It seems that nature is handling the situation well. McQueeney[6] bears this out in reporting two similar cases in normal health after fifteen and nineteen years. Autopsy reports indicate that the gallbladder and fistula frequently become a fibrous band of scar tissue.[3]

It would seem unwise to subject the obese, hypertensive patient presented to an operative procedure which conceivably might in itself produce a complication of duodenal sinus or common duct stricture.

SUMMARY AND CONCLUSIONS

1. A case of cholecystoduodenal fistula is presented.

2. The subject of internal biliary fistula is reviewed briefly.

3. Passage of a large gallstone is reasonable evidence of an internal biliary fistula.

4. Uncomplicated cholecystoduodenal fistula need not cause great concern.

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CANCER AS A CAUSE OF ENTEROCOLIC FISTULA

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SPONTANEOUS enterocolic fistulae are encountered most frequently as complications of advanced cancer of the large bowel. Long survival after diagnosis is rarely encountered, but the bizzare syndrome noted in these cases and occasionally the difficult and complicated differential diagnosis makes them worthy of report to the general practitioner.

CASE REPORT

Case 1. J. F. C., white male, aged 63, was first seen as an outpatient on November 5, 1949, with complaint of a severe diarrhea of sudden onset, present for three weeks. The past history showed chronic colon trouble for eight years, chiefly constipation with gas and bloating. In September 1948 he had had one episode passing a large amount of blood per rectum. He intended going to a doctor but, as the episode was not repeated, he forgot about it and continued in good health for almost one year.

Examination showed a white male, weighing around 160 pounds, in general good health and with no findings of note other than a slight enlargement of the prostate.

Barium enema on November 17, 1949, showed a diverticulosis of the colon. Some difficulty was noted in getting the barium to pass through the hepatic flexure but, because of diverticuli, too great pressure was not used. The patient returned in December 1949 for upper gastrointestinal series. At that time no obstructive lesion was demonstrated. Diarrhea and cramping pain continued and he was admitted to the hospital for further examination and study.

A course of sulfasuxadine was given, although the temperature was normal and stool examinations were negative except for the presence of occult blood. This drug appeared to make the diarrhea worse and so, throughout the month of December, the patient was treated with other remedies but no improvement was noted. He was found to be markedly anemic but since he gave a history of bleeding prior to entering the hospital and since the diarrhea was persisting, the anemia was thought to be due to malnutrition and bleeding diverticulitis. He improved with transfusions and an upper gastrointestinal series showed definite irritability of the duodenum which was diagnosed as a duodenal ulcer. Thus, it was felt that the blood loss was coming from a duodenal ulcer and he was put on a strict ulcer diet. However, he failed to improve.

Studies for intestinal parasites and stool cultures were entirely normal.

Despite transfusions, anemia continued. Glucose tolerance test was normal. Weight loss continued. Cholecystograms were made and they were entirely normal. He was put on a strict diet for sprue when it was found that the stools were clay-colored. He slowly lost weight and anemia continued. He was then placed on an anti-allergic diet for a week. He continued to lose weight, his weight having reached 120 pounds from a start of nearly 160. In spite of all the weight loss, no mass in the abdomen could be detected and blood pressure remained quite normal and the stools continued a silvery gray color.

Exploratory operation was urged but the patient refused since the diagnosis could not be guaranteed prior to operation.

During the month of February he went home and was followed again in the Outpatient Department. He was treated vigorously with pancreatic extracts, bile substances and other products to help digestion. However, his course continued downward. Extensive studies of liver function were made and all of them were normal so that, by the end of February, the picture was of a rapidly failing elderly white male, who had acholic stools, a severe diarrhea, completely normal liver function and no response to any medication directed at any of the symptoms.

He entered the hospital again on March 8, 1950,



Fig. 1. (Case 1). Fifteen minutes after barium ingestion shows outline of transverse colon below greater curvature of stomach.

having consented to an exploratory operation. Final x-ray checks were made at that time and fifteen minutes after taking barium by mouth, visualization of the transverse colon was obtained and a careful study of the x-rays then revealed that a fistula connected the duodenum to the colon in some way (fig. 1).

Exploratory operation was done on March 20, 1950, when the patient had already developed a complete obstruction and was alive only by virtue of constant gastric drainage. Operation revealed a large tumor mass blocking the transverse colon about three inches beyond the hepatic flexure. The tumor was agglutinated to the duodenum just above the entrance of the common bile duct and had infiltrated extensively into the duodenal wall. The fistula could be demonstrated easily, passing from the duodenum into the transverse colon. The proximal portion of the tumor mass had almost completely obstructed the hepatic flexure of the colon so that the patient not only had a fistula but had a complete bowel obstruction. The small bowel was moderately distended and the cecum markedly distended with a collection of old, dark green intestinal material. A right hemicolectomy was done after removing the tumor from the anterior surface of the duodenum by sharp dissection, leaving an open area of duodenum approximately two and one half inches in diameter which was closed with interrupted chromic catgut sutures.

The postoperative course was uneventful until the tenth day when the patient began to eat a little bit more than could be tolerated and developed a distention and signs of obstruction, later shown due to ileal stump dilatation syndrome; however, with the return to light eating and intravenous infusion, this period passed and the patient went home April 20, 1950, eating well and gaining. The patient gained back to his original weight of 155 pounds.

The patient was readmitted thirteen months after the operation. He had worked at his usual job most of that year but returned with symptoms of duodenal recurrence: gastric obstruction and jaundice. The gallbladder was attached to the stomach and the

stomach to the jejunum for palliative relief but, except for one week when the icterus index fell and bile returned to the stool, he continued a downward course.

Death occurred in the sixteenth postoperative month.

Autopsy revealed an extensive obstructing retroperitoneal metastasis involving the hepatic ducts. The same mass was pressing the duodenum forward and had invaded, or originated from, the posterior wall.



Fig. 2. (Case 2). Barium enema with resultant clear outline of the stomach.

This case shows how a malignant tumor may be present for one year before it causes constant symptoms and how cancer, which is most usually an obstructing condition, may first become manifest by severe diarrhea. The stumbling blocks in diagnosis in this case were many and its confusion with the conditions of diverticulitis, duodenal ulcer and medical conditions such as sprue and liver disease, can best be understood only by one who has gone through the painful process of trying to reach a diagnosis on a case of this type.

CASE REPORT

Case 2. Mrs. N. A. P., white female, aged 69, was first sent to the hospital on February 13, 1950, by her family doctor because of pain in the right upper quadrant of the abdomen and rales in the right lower lung. A chest x-ray was made which showed no active pulmonary pathologic condition and only slight cardiac enlargement.

She continued to fail and loose weight and developed symptoms of indigestion, which were apparently not severe. There was an occasional day or two of severe diarrhea followed by fairly normal function and there was some belching and gas and distention.

Her family physician sent her to the hospital again on July 20, 1950, for gallbladder studies as the right upper quadrant pain and indigestion suggested poor function, although she had had nothing to suggest a stone or colic. The x-rays showed a nonfunctioning gall bladder and it was decided to study the colon by means of barium enema and, for the first time, the real diagnosis was suspected as the barium was seen to pass directly from the hepatic flexure of the colon into the duodenum and back into the stomach (fig. 2). The diagnosis was confirmed on exploratory operation by Doctor A. P. Rowlette on August 1, 1950.

At operation, a mass nearly the size of a baby's head with multiple metastases throughout the right liver was discovered. Due to its great extent, no detailed examination was made but a biopsy was reported as carcinoma, gland cell type (adenocarcinoma).

By virtue of transfusions and special feedings, the patient was reconditioned enough to go home but she died within six weeks of leaving the hospital. No postmortem was obtained.

DISCUSSION

Although fistulae between the colon and small bowel have been reported as a complication of benign diverticulum of the colon,[1] and benign diverticulum of the jejunum,[10] following peritoneal tuberculosis or abscess or following trauma,[3] they are practically always the result of cancer of the colon[2] if the postoperative gastrojejunocolic fistulae are excluded. A brief review of the literature shows that the condition is not rare but the two cases reported reemphasize that it is not always easy to recognize. In the first place, there is no standard syndrome. One patient was first seen suspected of having right lower lung involvement, the other for a diarrhea which first suggested amoebic dysentery. The disorder may be associated with pain, or free of pain. Diarrhea is not constant. Fecal vomiting, bad breath and eructations are not constant. Great variations in this picture must necessarily be hypothecated on great variations in functional disturbance such as whether the food shunt is marked or small in amount, whether below the origin of the bile ducts or above (as in case 1), whether further obstruction is present or not and, finally, on such physiologic factors as peristalsis, pyloric patency and secondary physiologic disturbances due to hemorrhage, anemia and malnutrition.

The literature shows that fistulous lesions from any portion of the colon to any portion of the small bowel may and do occur. D'Allaines[4] reports a fistula from the lower ileum (40 cms. from the ileocecal valve) with agglutination to the left colon, cured (ten years) by wide resection. Semenza[5] reports a fistula from midjejunum to transverse colon, cured surgically. Linton[6] reports two cases of duodenocolic fistula like the ones reported. He presents a radical two stage procedure for the cure of the condition. Strelinger[7] reports a case with fistula from the descending colon to the ileum. Massachusetts General Hospital case 31472[8] is of a fistula from the terminal ileum to the rectosigmoid. Calmenson and Black[11] report a series of eight cases of duodenocolic cancers in a forty year series of 1,400 cases of right colon cancer. However, of these eight, only two cases showed a fistula. Feldman[12] reports two high enterocolic fistulae with large carcinomatous masses.

Enterocolic fistula is not a condition in which one can outline a simple textbook picture. A lucky x-ray study may make it ridiculously simple (case 2), or miss it completely for sometime

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(case 1). The cardinal symptoms, however, are weight loss, diarrhea (without fever or parasites) and, in many cases, an abdominal mass. Undigested food in the feces should narrow the search greatly, but, on the other hand, my case 1 went day after day with silvery gray, putty-like stools without any stool evidence of digestive failure while on a low residue soft diet. Another characteristic point in this diarrhea is a complete lack of response to any medical therapy including all of the usual items such as aluminum gels, bismuth compounds and atropine in pupil dilating quantities. I believe case 1 of high duodenocolic fistula, is the only lesion that can produce the syndrome of acholic diarrhea with completely normal icterus index and completely normal liver function tests. Obviously, this syndrome can obtain only in the period when the flow of bile passes out into the small bowel, but is obstructed in the transverse colon from mixing with the food flow through the fistula into the transverse colon. This condition was present at the time of the first operation when the small bowel and cecum from the duodenum to the hepatic flexure was filled with dark green soft digestive matter.

Treatment in any enterocolic fistula is, of course, surgical, and I agree with Linton that probably only radical surgery offers any real hope of survival. These are all late cases and retroperitoneal metastases are probably present in many of them by the time the patient first presents significant symptoms. As Linton has pointed out, the fistula, mass and extent of primary operation needed make two stage operation the only possible consideration if complete radical treatment is to be done in duodenocolic malignant fistula. I followed the case reported with x-rays every three to four months and noted a change in the duodenal pattern at about the sixth postoperative month but at that time the patient was free of clinical symptoms and working daily and gaining weight. Retroperitoneal metastases are probably common enough in these late lesions so that the statistical differences in the end results treated with radical surgery and with conservative surgery will be small enough to discourage any but the bravest and most skillful of surgeons from the complete radical attempt at cure.

SUMMARY

Enterocolic fistulae, when tuberculosis, trauma and previous operations can be excluded, are due to cancer until proven otherwise. Diagnosis of these fistulae is based on a syndrome of diarrhea, blood in the stool, weight loss and abdominal mass. Confirmation is by x-ray and neither the upper gastrointestinal series or the barium enema should be omitted. The pitfalls in diagnosis are many. Surgery, even of the most radical type, may be only palliative, as these are always late cases. Duodenocolic fistula may present a paradoxical syndrome, that of acholic, pasty silvery gray stools, in the presence of normal liver function tests and normal icterus index.

Wabash Employees' Hospital.

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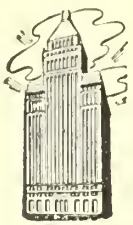
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DRUG AIDS IN DISLODGING OBJECTS SWALLOWED OR INHALED BY CHILDREN

A new use for an old drug—aminophylline—to aid in dislodging foreign bodies swallowed or inhaled by children was reported in the Nov. 24 *Journal of the American Medical Association.*

The drug has been used successfully to relax the bronchial muscles and thus permit spontaneous remission of foreign objects inhaled or swallowed by youngsters, according to Dr. I. Newton Kugelmass, New York.

Four such cases involving children were described by the doctor, who treated them by rectal retention of the drug. Prompt remission resulted.



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Special Article

CLINICAL INTERPRETATION OF V-LEADS

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ELECTRICAL CHANGES ASSOCIATED WITH CELLULAR ACTIVITY

CELLULAR ACTIVITY is associated with electrical changes. This applies also to muscle cells including the myocardium. The cardiac cycle of systole-diastole corresponds to the electrical changes of depolarization, apolarization, repolarization and the polarized state. The resting charged myocardial cell is in a state of electrical tension; electrically it is surrounded by a membrane which separates innumerable electrical charges, the so called doublets. These charges are negative on the cellular side and positive on the outside of the cell. They are called doublets because each negative charge is balanced by a positive one.

Stimuli to activity reaches a cell at one point. Actually this stimulus is the impulse which normally has originated in the sinus node and has spread through the auricles and the conduction system of the ventricle until it has reached the muscle cells. When the stimulus reaches the cell, a negative charge at this point neutralizes a positive one and the cell is depolarized. This process of depolarization spreads in an ever widening circle until all the doublets have become discharged and the cell is entirely depolarized. Obviously, the last point to become depolarized is diametrically opposite the one which was originally stimulated.

In the heart, the myocardial cell remains depolarized for a measurable period of time, a small fraction of a second, then repolarization begins. If the cell is healthy and the external environment normal, repolarization will follow the same sequence as did depolarization. The point which was first to become depolarized will first become polarized and repolarization will spread over the cell until it reaches the point which was last to become depolarized. The cell is now completely repolarized and remains charged in the polarized state until it is again stimulated. In the heart, this process is the electrical aspect of muscular activity. Depolarization immediately precedes myocardial contraction (systole).

This description has been given as it applies to one cell. The myocardium consists of many cells and actually this process of depolarization and repolarization spreads through the myocardium from cell to cell. First to become activated is the left side of the septum. From there the process spreads through to the right, then the impulse spreads over the entire endocardial surface of the heart. The activation process begins simultaneously to spread from the endocardial to the epicardial surface of the heart.

These electrical changes can be measured by means of a galvanometer and recorded. Such a record of myocardial activity is called an electrocardiogram. The instrument which registers an electrocardiogram is called an electrocardiograph (in common parlance the electrocardiogram is sometimes, but incorrectly, called an electrocardiograph).

THE VOLUME CONDUCTOR

An electrolyte is a substance which will conduct an electric current. A current will flow if there is a difference in electrical charge in different parts of the electrolyte. Such a difference in electrical potential can be measured if the two parts are connected through a volt meter.

Let it be assumed that a circular vessel is filled with water containing a salt such as sodium chloride. This solution is an electrolyte. Let it be further assumed that two poles of a battery are placed equidistant from but close to the center of the vessel. One half of the container will be electrically negative in relation to the other but the potential will decrease with the distances from the pole of the battery. In fact, the potential decreases at a rate equal to the square of the distances from the pole. It will, therefore, be smallest at the periphery of the vessel. The potential of one half the container will be to some extent neutralized by the potential of the other half of the container. Through a linear zone of points equidistant from the poles of the two potentials the two potentials will neutralize each other and the result will be zero. This zero zone extends from one side of the container through the center to the other. With increasing distance from this line, one potential will prevail and will be relatively strongest, 90 degrees from the zero zone.

If electrodes are placed in two places at the periphery of the vessel, current will flow from one to the other unless, of course, the two electrodes are placed at points of equivalent potential. This is the principle which is being used in the electrocardiograph and the instrument is constructed so that the current passes through the galvanometer in the following manner: At the electrode through which the current enters a positive electrical charge is registered negatively in the galvanometer and a negative charge is registered positively. At the electrode where the current leaves, a positive charge is registered positively and a negative charge is registered negatively. The volt meter registers the difference between these two values. If three points are

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This material will be included in a book: "Introduction to Medicine—A Functional Approach to an Integrated Concept of Medicine." (In Preparation).

chosen equidistant from each other at the periphery, the sum of their potentials will be zero. The reason for that is explained in Goldberger's "Unipolar Lead Electrocardiography," page 16.

These theoretical considerations apply to ideal conditions in which the volume conductor is circular and the three equidistant points are actually 120 degrees apart and where the conditions of conduction through the electrolyte are uniform. For the purpose of electrocardiography, the human body has been considered a volume conductor. While the theoretical conditions do not entirely apply, they resemble those of a volume conductor sufficiently for the principles thereof to be applied for clinical use.

For the purpose of this treatise, it may be stated, first, that the potential becomes weaker as the distance from the source of the potential becomes greater; second, that the sum of the potentials recorded by electrodes placed at approximately the same distance from the heart and from each other may be considered zero.

In practice, electrodes placed on both arms and one leg may be so considered. Now to resume the principle of the volume conductor. Let the leads from three equidistant electrodes on the periphery be brought to a common "terminal" and there united to form a single "lead." Let another electrode be placed somewhere in the volume conductor and let the lead from it be connected with the lead from the common terminal in such a manner that the electrode placed in the volume conductor registers a positive potential with an upright deflection. If a volt meter is inserted into the circuit thus formed, it will register only the potential of the single electrode, for the sum of the three others is zero. This electrode may, therefore, be used as an "exploring" electrode to register the potential of any desired part of the body. Leads thus obtained have been called "V" leads.

THE V-LEAD

The V-lead, then, is based upon the principle that the electrocardiograph is made to register overwhelmingly the potential from one electrode only, namely, the one toward which the current travels. The instrument is so arranged that a positive potential is registered as an upward deflection and a negative potential is registered as a downward deflection. An upward deflection (positive potential) indicates that action current is spreading toward the electrode. A downward deflection (negative potential) indicates that current is spreading away from the electrode. Absence of deflection at a time when other leads indicate the presence of electrical activity occurs when the spread is parallel to the surface of the electrode.

The magnitude of the deflection has two dimensions: height and width. The height is proportional to the voltage of the potential; the width is a function of time, the longer a potential is present the wider will be the complex. It is measured in fractions of seconds as indicated on the record, not in mm., for, naturally, the excursions become wider when the paper runs faster and vice versa.

It follows from what has been previously stated that the voltage is determined by several factors.

Direction.—The potential of currents of equal voltage will vary with the direction of the current in relation to the surface of the electrode. It was just stated that a current travelling parallel to the surface will create zero potential and thus no deflection. As the surface of the electrode is placed increasingly across the path of the current a potential will be created which will reach its maximum when the current strikes the surface of the electrode in a perpendicular fashion. This assumes constant original strength of the current and constant conditions of conduction through the medium.

Original Strength of Current I.—The voltage of the action current arising from healthy heart muscle is proportional to the amount of muscle which is being stimulated. A larger mass will produce a greater potential. This assumes constant direction of the current and constant conditions of conduction through the medium.

Conditions of the Medium of Conduction.—Assuming that the direction of the current in relation to the electrode and the mass of muscle generating the current be constant, the potential is determined by the conditions of the medium through which the current must travel. Relatively, the greatest potential obtains immediately on that surface of the muscle mass toward which the current travels. In that case, the only variable which will affect voltage is the condition of the muscle. Healthy muscle creates greater voltage than muscle which is affected by serious pathologic processes. Myocardial pathology of severe degree may interfere seriously with the strength of the action current and with the rate of its conduction through the muscle.

In clinical electrocardiography it is rarely possible to place the electrode immediately on the surface of the heart; generally the electrode must be placed on the surface of the body. There now intervenes body tissue which for our purpose acts like a volume conductor. While the effect of this function is much less in the precordial leads than in the case of the limb leads, because the distance between the heart and the body surface is so much shorter, it is, nevertheless, appreciable. The tissues between the surface of the heart and the electrode, acting as a volume conductor, may influence the potential at the electrode in two ways: by distance and by composition of the medium of conduction. It was stated in the introduction that the farther the current had to travel through conductive, but electrically inactive, tissue the smaller became its potential. This also applies to the V-leads. An electrode placed in

the immediate proximity of the heart will, other things being equal, register a greater potential than one placed elsewhere on the chest at some greater distance from the heart.

The simple rules for a volume conductor assume that it is of the same composition throughout. This is, of course, not the case with the thoracic wall and the structures which lie between it and the heart. There may be thickened, scarred pericardium or pleura, there may be pericardial or pleural effusions of varying consistencies, there may be lung tissue which may be normal, consolidated or emphysematous, or there may even be pneumothorax, and air does not conduct electrical current. The chest wall itself consists of bone, muscle, fat and skin in varying proportions and on its surface are secretions of the skin which seriously interfere with transmission of the current from the body to the electrode. Unless their effect is minimized by suitable means they may delay and even set up currents which interfere with the action current.

Attempts have been made to set numerical standards both for normal and for various pathologic conditions. However, from the foregoing discussion it is readily seen that many factors influence the voltage of the V-leads as registered by the exploring electrode. Many of them are extracardiac and exert their effect between the heart and the electrode. The diagnosis must, therefore, consider the effect of all of these and not be bound by artificial, arbitrary, numerical criteria. One can not state, for instance, that hypertrophy is present if a deflection exceeds a certain number of millimeters.

One additional factor interferes with the reading of these records. They have been called unipolar, but such a term is at best approximate for the indifferent electrode is not entirely indifferent. It would be if all its component electrodes were strictly in one plane and the potentials which they record were also in one place. However, neither of these conditions obtain strictly and if the deviations are sufficiently marked they may create a force sufficiently strong to distort the record obtained from the exploring electrode.

"Unipolar" also tends to convey the impression that a record is obtained from a single limited area of the heart only. This also is not strictly true. If an electrode is placed directly on the epicardial surface of the myocardium the potential which it records is overwhelmingly the one which obtains immediately under it. But that again is an area and not a point, and all other parts of the heart contribute to some minor extent to influence the potential at the electrode. This consideration becomes more important as the electrode is removed from the immediate surface of the heart. Precordial leads record the potential of the epicardial surface of the nearest myocardium but, also, the potential of neighboring and more remote parts of the heart, even of the walls on the opposite side of the heart. If the muscle mass which is near the electrode is thin and that of the opposite wall thick, the thicker wall may dominate the picture even though it is more distant. Potential obtained from such distant muscle is recorded from the part of it which is nearest to the electrode. If this happens to be endocardium and the excitation spreads from endocardium to epicardium the record from this muscle will be a downward deflection. If the electrode is a long distance from the heart, as in the case of the V-limb leads, it records equally from all parts of the heart, but the direction of the deviations is determined by the surface which faces it. That, again, depends upon the position of the heart in relation to the shoulders and the thighs. These relationships will be further considered in the discussion of the V-limb leads.

Normally the heart is activated in a certain sequence. Activation of the ventricles spreads from the A-V node over the left side of the septum, then from the left to the right surface of the septum, hence over the entire endocardial surface of the myocardium and, finally, through the myocardium from the endocardial to the epicardial surface. The spread over the endocardial surfaces of the septum and the walls of the ventricles is instantaneous and is not recorded but the spread through the mass of the septum and of the myocardium consumes time and is recorded according to the rules recorded above.

The part of the V-lead which records depolarization is composed of three parts.

First is recorded depolarization of the septum. Generally this takes a short time and is of low voltage, although in hypertrophied hearts the wave arising from the septum may be considerable as it may be also in young vigorous hearts, especially when the action is recorded through a thin chest wall. Logically, if the electrode faces the right surface of the septum, the deflection is positive; more so the more the surface of the electrode and the surface of the septum are parallel. If the wall of the septum is at right angles to the surface of the electrode, the current spreading from the left to the right surface runs parallel with the surface of the electrode and is, therefore, not recorded. If the electrode faces the left surface of the septum the deflection is negative, for the current travels away from the electrode. The activation of the right ventricle follows the activation of the septum after a short interval. In fact, the interval is so short that it is difficult to separate the septal and the right ventricular components. Normally, the right ventricular wall may be so thin that records obtained inside the right ventricle and from the surface of the right ventricle have failed to show a difference which could be ascribed to current travelling through the right ventricle. There is also a question whether record of activity in

the right ventricle may not be absorbed in the early part of the record of left ventricular activity which is so much more powerful.

Nevertheless, at present it is generally thought that most electrocardiograms obtained over the surface of the right ventricle will record spread of action current through this muscle as a small initial positive deflection. Generally, right ventricular activity cannot normally be identified in records obtained over the left ventricular wall. In records from the inside of either the right or left ventricle, record of right ventricular activity will be superimposed upon that of left ventricular activity. They cannot be separated for they are negative. The current travels away from the electrode both through the right and the left ventricular walls.

By far the largest mass of the myocardium is the left ventricle; it, therefore, contributes the largest part of the electrocardiogram. When the exploring electrode is placed over the right ventricle the majority of the activity of the left ventricle spreads away from the electrode and the deviation is negative. When the electrode is placed over the epicardial surface of any considerable mass of the left ventricle, the picture is dominated by a large positive deflection. Generally, most information about the left ventricle can be obtained from leads obtained from its surface, but sometimes the heart is so rotated that the negative complexes obtained over the right ventricle give better evidence concerning the left ventricle.

Experimentally leads have been obtained from the inside of both ventricles. The first deflection of records thus obtained reflects septal activity. Because the current travels from the left to the right surface of the septum, this first deflection is negative if electrode is in the left cavity, positive if it is in the right cavity. All other activity both in the right and the left ventricular wall is from the endocardial to the epicardial surface of the myocardium and the record of such activity is a negative deflection, in which, as stated previously, right and left ventricular activity cannot be separated. Such electrical conditions obtain not only in the ventricular cavities but also in the auriculoventricular openings and in the mass of the volume conductor (i.e. the body) which lies between these openings and the electrode. If, therefore, an electrode is placed on the surface of the body in a place where it faces a large auriculoventricular opening it will record the cavity potential. If the opening faces the base of an extremity, such as the right shoulder, this same potential will be transmitted throughout that extremity. An electrode placed anywhere on it will record the cavity potential. In actual practice, however, such pictures are rarely pure; the record of the cavity potential may be distorted by potential projected from some epicardial surface of the heart which also faces the same surface area of the body.

The conditions which apply in depolarization apply also in repolarization but with one additional consideration. Other things being equal, repolarization proceeds somewhat more slowly than does depolarization. The areas occupied by the two curves are of similar size but of opposite direction. However, some factor which is not understood may interfere with this relationship and the repolarization wave is not always as deep as it theoretically should be; in fact, it may be reversed in direction and be similar to the depolarization curve. Normally this occurs over the anterior surface and the left margin of the heart. Over a large part of the left ventricle and the adjoining part of the right ventricle the depolarization and repolarization curves are both positive. To the right and the left the repolarization waves gradually become negative and they are negative over the entire posterior, including the diaphragmatic surface of the heart. Leads which register cavity potential normally show negative repolarization curves. These leads show a summation of all the changes through both ventricles. The fact that the normal cavity repolarization curve is negative indicates that the overwhelming repolarization current travels from the epicardial to the endocardial surface, that is, in the direction opposite to that of the depolarization current. This point has an important bearing.

If an electrocardiogram shows abnormal repolarization waves in some leads it may be important to know the degree of this change. The number of leads which show abnormal waves may give some indication of how extensive the damage is, but the cavity potential is the sum total of all the forces at work. The direction of the repolarization in these leads is, therefore, a general indication of the amount of change which has occurred, not only of the area of muscle mass which has been changed but also the amount of change in relation to the total electrical force of repolarization.

These, then, are the general considerations which should be applied when interpreting V-leads. In addition it is, of course, necessary to be familiar with variations especially of the normal state. Such familiarity can be obtained only through experience. To standardize experience certain leads have been accepted for routine use. These are of two kinds: semi-direct, precordial leads and indirect, limb leads.

THE NORMAL PRECORDIAL V-LEADS

Position of the Electrodes.—In order to standardize the procedure of taking precordial leads and to produce comparable tracings, certain locations on the chest have been chosen for place of the electrodes. These are the positions 1, 2, 3, 4, 5 and 6 as recommended by the joint com-

mittees on electrocardiographic technic of the American Heart Association and the British Heart Association.

In routine electrocardiography, it may not be necessary to take all of these leads; two or three taken over the right and left precordium may suffice. On the other hand, when additional information is needed, additional leads may be taken, either from positions 7 and 8 and further round the back or over higher levels of the chest, depending upon where a localized lesion is suspected to be. Additional leads may be obtained from the tip of the sternum and from electrodes placed at different levels in the esophagus.

Leads V1 to V6 follow a certain fundamental pattern in the normal heart, but this pattern varies with the position of the heart in the chest. Two principal outlines are recognized over the anterior chest: the right and the left ventricular pattern.

The right ventricular pattern is seen over the right precordium. It consists of an initial positive deflection. This is ascribed partly, and principally, to the spread of activation current from the left to the right surface of the septum, toward the electrode, and partly by current travelling through right ventricular myocardium. The contribution of this second component to this positive deflection is uncertain. When the heart is rotated so that more of the right side faces the chest wall this deflection tends to become large, partly because the surface of the septum will face the electrode more directly and partly because this rotation of the heart is frequently associated with right ventricular hypertrophy. When the heart is rotated in the opposite direction, so that more of the left ventricle faces the anterior chest wall, the initial positive deflection may be small, partly because the septum tends to be at right angles to the surface of the electrode and partly because the evidence of right ventricular activity may be "swallowed up" by the evidence of left ventricular activity, for in these cases there is often left ventricular hypertrophy.

Following this relatively small positive deflection there is, typically, a deep negative deflection. This is formed by current travelling from the endocardial to the epicardial surface of the left ventricle, away from the electrode over the right precordium. The depth and the width of this component are, therefore, dependent upon conditions or conduction through the left ventricle. Sometimes, if the heart is rotated so that the left ventricle tends to be away from the anterior chest wall, these impulses give a truer impression of conduction through the left ventricle than do records obtained over the left precordium. This obtains, for instance, in left ventricular hypertrophy with marked clockwise rotation of the heart.

Normally, this negative deflection passes into the part of the record which reflects the apolarized phase. Only if the heart is in a somewhat unusual position in the chest will the normal electrocardiogram show a second positive deflection over the right precordium. In this apolarized phase the baseline is at zero potential; however, minor deviations from the zero line are sometimes seen in hearts which are normal. As isolated findings, they must not be considered signs of pathologic conditions.

Finally, follows the wave of repolarization. Depending upon the constitution of the heart which is being examined and its position in relation to the anterior chest wall, this deflection may vary in the normal electrocardiogram. In position 1 it is frequently negative, reflecting the usual action over the posterior surface of the heart. As the electrode moves through positions 2 and 3 it tends to be upright more frequently and to increase in amplitude as the electrode moves to the left. The absolute direction and amplitude of the wave of repolarization is less important than the trend of increasing positivity from right to left. The more vertical the heart is, the more likely is it to be rotated so that the right surface faces the anterior chest wall (clockwise rotation) and, consequently, the more likely are negative repolarization waves likely to be seen over the right precordium. These conditions obtain more frequently in children and adolescents and in persons with asthenic habitus, and also with right ventricular hypertrophy.

The Left Ventricular Pattern.—In the electrocardiogram obtained over the left precordium, the depolarization curve may normally contain three elements. First, there may be a negative deflection which generally is small but which may be several millimeters deep. It reflects the spread of activation current through the septum from the left to the right side and is produced if the interventricular septum and the surface of the electrode over the left precordium are in parallel planes. This is a normal manifestation and should not be confused with initial, negative deflections arising from disturbances of coronary circulation. However, the deeper this deflection is the greater is the probability that it is pathologic, but the final opinion on its significance should depend more on clinical judgment than on the number of millimeters of its excursion. The farther the electrode is moved to the left the more parallel with the surface of the septum is it likely to be and, therefore, the deeper the deflection; also, the farther the electrode is moved to the left the farther is it likely to get from the septum and it will decrease with distance. Its actual size will, therefore, be influenced by these two factors. It is most in evidence in hearts with marked rotation of the left side of the heart toward the anterior chest wall, such as may be seen in "transverse" hearts with left ventricular hypertrophy. In such cases it generally gets deeper toward the left.

The next deflection is the principal one. It is caused by the current which travels from the endocardial to the epicardial surface of the left

ventricular wall toward the electrode. It is positive and its height and duration depend upon the thickness of the muscle mass and the proximity of epicardial surface to the electrode. It may be of high voltage in left ventricular hypertrophy and when the heart beats against a thin chest wall, as in children. Also, when the myocardium is thick, the time required to traverse it may be considerable, 0.04 to 0.06 seconds. The curves produced in this manner by normal left ventricle merge gradually into those produced by hypertrophy and these in turn merge into certain curves produced by left bundle branch block. Normally, the voltage of this deflection increases from right to position 4 or 5, then the distance from heart to electrode becomes effective and the voltage decreases through 5, 6 and 7.

If the electrode is placed over the last part of the left ventricle to become activated, this positive deflection will be the end of the depolarization curve. However, depending upon the size of the left ventricle and its position in relation to the electrode, this is often not the case and some ventricular mass is activated later than the part under the electrode. Then some part of the myocardium is being activated after the current immediately under the electrode has reached the epicardial surface and, in that part action current continues to travel, its direction being more or less away from the electrode. This activity is recorded as a negative deflection following the positive depolarization curve. When this curve is present it generally diminishes in depth from right to left and may disappear anywhere from position 4 to 7. This phenomenon is most marked in the presence of left ventricular hypertrophy and in some such cases it persists and merges with a secondary negative wave seen in tracings obtained from the back.

The repolarization waves over the left precordium are normally positive. It is rare for the heart to be rotated anticlockwise; so much that the change in direction of repolarization wave can be observed in routine V leads. However, there is frequently some decrease in voltage and in cases of left ventricular hypertrophy the repolarization may be so changed in direction that T-V5 and T-V6 may be inverted.

Transition Between Right Ventricular and Left Ventricular Patterns.—Normally the right ventricular and the left ventricular patterns stand out quite clearly in the right and left precordial curves, but the transition between the two patterns is quite irregular in location and manner. Depending upon the manner in which the heart is rotated the change may occur over the right or over the left precordium. Its occurrence at either extreme is in itself evidence of rotation. Persistence of the right ventricular pattern far to the left is called clockwise rotation; extension of the left ventricular pattern far to the right is called anticlockwise rotation.

The transition from the right to the left ventricular pattern may, normally, occur in one of three ways: (1) It may occur suddenly, one lead, for instance V-3, may show a typical right ventricular pattern, and V-4 will show a typical left ventricular pattern. (2) It may occur gradually: from lead to lead the positive deflection becomes taller and the secondary negative deflection becomes shallower till it disappears. (3) It may be accomplished through a transitory pattern of vibratory excursions of low voltage. All of these transitions may be seen in a normal heart.

The repolarization waves generally become taller from right to about position 3 and 4; then they diminish in size through positions 5 and 6. Some hesitance should be used in the interpretation of low or even inverted waves over the extreme left precordium and consideration should be given to all the factors which influence them. The diagnosis of "myocardial damage" or "coronary T-waves" should not be made too readily.

Normal Patterns Obtained Over the Back and Over the Right Chest.—As the electrode is moved from right to left beyond the confines of the precordium, it passes the posterior axillary line to the left side of the back. Here two aspects of the heart determine the pictures. Depending upon the position of the heart the epicardial surface of the left ventricle faces more or less of the back and produces a positive deflection. However, as the electrode moves over the back the cavity potential transmitted through the left auriculoventricular opening gradually makes itself felt. It is negative in relation to the rest of the heart and, as this negativity is present early, the first deflection is negative. It becomes deeper from left to right, and from below upward. Generally, sufficient epicardial surface of the left ventricle faces the back, especially the lower left portion of it, to produce an upright deflection which follows the original downward deflection. This positive deflection becomes less upward and to the right as the influence of the left ventricle wanes. In fact, as the electrode is moved to the right, a positive deflection occurring late in the complex is more likely to be produced by some part of the right ventricle which is depolarized late. This muscle mass is normally thin and the deflection produced by its depolarization is thin and small.

As the electrode moves to the right it will gradually come to face the right surface of the septum. As this happens an early positive deflection may be registered. It is the same deflection which is seen over the right precordium and it represents the action current travelling from left to right through the septum.

Leads taken over the back and right chest, then, may present three deflections: (1) an early small positive deflection produced by the septal current, (2) a negative deflection representing cavity potential and (3) a late positive deflection reflected from the epicardial surface of ventricular mass which is depolarized late.

The Ensiform Lead.—Sometimes a lead is taken over the ensiform process. It will reflect depolarization occurring in an area between those covered by V-1 and V-2, and the diaphragmatic surface of the heart (VF). It should normally show transition between these two patterns. It is of value chiefly in identifying localized lesions in this area.

Dextrocardia.—If the two arm leads show patterns which are reversed, the reason may be either that the right and left arm electrodes have been reversed, or that the patient has dextrocardia. A study of the precordial leads will decide the question promptly.

THE V LIMB LEADS

The V limb leads differ from the precordial leads in that they are indirect leads. They do not record electrical impulses as action current reaches the epicardial surface close to the electrode, but a summation of potentials of all parts of the heart as these face the surface of the electrode. The information obtained from them is, therefore, of a more general nature.

By arbitrary agreement the indirect V-leads are routinely obtained from the right and left arms and from the left leg. The aspect of the heart which faces the right arm is largely composed of the right auriculoventricular opening, possibly with the addition of some of the epicardial surface of the right ventricle. Through the right auriculoventricular opening is projected the right cavity potential. It has previously been described how this consists of a small initial positive deflection caused by the current passing through the septum to the right surface, and a deep inverted deflection produced by current travelling away from the cavity through the myocardium. If any considerable part of the right ventricular epicardium also faces the right arm, there may be a final positive deflection but, because this muscle mass is thin, this deflection is of low voltage and short duration. The repolarization wave is the summation of the entire myocardial process and is normally inverted, that is, it is of the same direction as the principal depolarization curve. This part of the heart is relatively fixed and records obtained from the right arm are not much modified by position of the heart.

The records obtained from the left arm record the sum total of potentials of the cardiac surfaces which face the left shoulder. These may vary greatly with the size and position of the heart. The most important factor which determines what aspect of the heart is to face the left shoulder is rotation around an anterior-posterior axis. At one extreme of this rotation the heart may be so vertical in its position that the potential projected toward the left arm is similar to the one projected toward the right arm. In such cases the right surface of the septum may face the left arm and there may be a small primary positive deflection. This is followed by the typical cavity potential; that of a deeply inverted deflection followed by a negative repolarization wave. Sometimes the position is slightly different and right ventricular epicardial surface may face the left arm. Then the depolarization deflections are similar to both the cavity potential obtained from the right arm and the leads from the right precordium, but the repolarization curve is positive, which it would not be if it reflected a normal cavity potential. When the heart is a little less vertical than just described the left cavity potential may face the left arm. In this case the entire depolarization deflection and the repolarization wave are negative.

As the heart swings toward the transverse position it next enters a zone where the cavity potential is gradually being out-balanced by the potential from the left ventricular epicardium. Gradually the principal depolarization wave becomes less inverted, then the complex becomes "vibratory"—small positive and negative deflections alternate, or the complex is almost isoelectric —and finally emerges the sharp upright deflection which is typical of the left ventricle. At the same time the repolarization wave becomes positive; in fact, it does so rather early in the process for it is positive in most normal tracings from hearts in intermediate or transverse positions. However, sometimes another rotation comes into play and the posterior surface may influence the left arm lead to a varying extent, and the repolarization wave may be low, isoelectric or, occasionally, inverted in the normal electrocardiogram. Nevertheless, in the large majority of tracings from normal hearts this wave is positive in the left arm lead, and a negative wave should be looked upon with suspicion.

Sometimes when the heart is in the transverse position, the left side of the septum may also face the left arm and produce a small, initial negative deflection. In such cases, the record obtained from the left arm resembles that obtained over the left precordium; that is, a small initial negative deflection is followed by a tall sharp positive one and the repolarization wave is positive.

The records obtained from the electrode on the left leg reflect the potentials from the surfaces of the heart which face the diaphragm. They also vary greatly according to the position and the size of the heart. If the heart is vertical in position, the left ventricle faces the diaphragm. In marked cases, the left side of the septum may face the diaphragm and there may be an initial slight negative deflection, but the dominant deflection when the heart is vertical, is positive, tall and sharp. As the heart swings from the vertical to the transverse position, the aspect which faces the diaphragm gradually changes. The positive deflection gets small and gradually the potential obtained over the right ventricle makes its in-

fluence felt. Transitional complexes are seen similar to those observed over the transitional zone between the left and right precordium. Eventually, the pure right ventricular pattern emerges when the heart is in the transverse position. Now a small, positive septal wave is followed by a deep sharp deflection. The repolarization wave is generally positive; however, it may be modified by influences from the posterior surface of the heart where it is negative for the heart may be so rotated that the posterior surface partly faces the diaphragm. A negative repolarization wave in the leg lead is, therefore, not necessarily a pathologic sign.

Thus, it will be seen that within the normal range, a study of the limb leads will reveal much concerning the position of the heart in the chest. Additional information is then obtained by correlation with the precordial leads. The understanding of the position of the heart in the chest is a valuable prerequisite for the study of pathologic changes in the electrocardiogram.

Five fundamental positions of the heart are recognized:

(1). *The Vertical Position:* VL shows cavity potential and VF shows a large positive deflection (left ventricular epicardial potential).

(2). *The Semi-vertical Position:* VL shows potential intermediate between cavity potential and left ventricular surface potential. VF shows left ventricular surface potential.

(3). *The Intermediate Position:* VL and VF both show transitional complexes. However, a definite positive deflection is present in both leads, though not tall in either.

(4). *The Semi-transverse Position:* VL now shows a definite left ventricular surface potential while VF shows a transitional complex.

(5). *The Transverse Position:* VL shows a definite left ventricular surface potential and VF shows a right ventricular surface potential.

The large majority of electrocardiograms can be placed in one of these groups. However, occasionally a tracing is encountered in which an unusual rotation or a myocardial pathologic process produces a pattern which cannot be identified. In such cases, the position of the heart is considered "indeterminate."

This analysis helps in distinguishing between true dextrocardia (provided the electrodes are correctly applied) and transposition of the heart.

THE RATIONALE OF ABNORMAL CHANGES IN THE V-LEADS

The following abnormal changes may be encountered in V-leads. The septal deflection may be absent when its presence would be expected.

The curve which records right ventricular activity may be of abnormally high voltage, it may be absent when it should be present and it may be of abnormally long duration.

The curve which records left ventricular activity may be of abnormally high voltage, it may be lower than expected or even absent and it may be of abnormally long duration.

During the interval between depolarization and repolarization, the phase of apolarization, the string may be abnormally above or below the isoelectric level, indicating that the current of injury (v.i.) is present.

The wave of repolarization may be of unusual amplitude in the expected direction, it may be isoelectric or in the opposite direction of normal.

The recognition of these abnormal deviations and their proper interpretation encompasses the entire field of pathology as revealed by the V-leads. The electrocardiographic diagnosis should be made by the following steps:

1. The pathologic changes in the tracing should be identified.

2. Their meaning should be expressed in terms of physiologic dysfunction.

3. The possible underlying pathologic process or processes should be suggested by correlation with the clinical data of the case.

4. The clinical diagnosis is made by the clinician who will correlate the information suggested by the electrocardiogram with the entire clinical picture.

The immediate association of a certain electrocardiographic configuration with a certain clinical condition will too frequently lead to mistakes in diagnosis.

Abnormalities of the Septal Deflections.—In cases of right ventricular hypertrophy the first positive deflection over the right precordium may be abnormally tall. It has not been shown to what extent this excessive height is caused by hypertrophy of the septum or by thickened right ventricular wall. In left ventricular hypertrophy the deflection may be small or even absent over the right precordium, while the negative deflection which it produces over the left precordium may be quite pronounced. This may be a function of position of the heart in the chest, for left ventricular hypertrophy frequently is associated with anticlock wise rotation whereby the septum may be placed more or less at right angles to the electrode and the current passing through the septum passes parallel to its surface.

If part of the septum is necrotic, or at least "electrically dead" as the result of infarction, it will act simply as a volume conductor and the negative potential which early appears in the left ventricular cavity will immediately be transmitted through the septal wall, as through a window, and if the anterior cardiac wall is also necrotic, as is often the case, the negative potential may be transmitted through it and appear in leads over the right and central precordium. These are the only conditions under which a marked initial negative deflection is seen over the right precordium.

The Right Ventricular Deflections.—It is not always clear to what extent the deflections associ-

ated with right ventricular activity are simultaneous with septal or with ventricular curves. Certainly a tall initial deflection is seen over the right precordium in many cases of right ventricular hypertrophy, but in general hypertrophy the right ventricular action current may be overwhelmed by the far more powerful left ventricular potential. In right ventricular hypertrophy electrical activity may persist in the right ventricle after the left ventricle has been completely depolarized. In such cases a late positive deflection may be seen in leads which face the right ventricular epicardium; i.e., the right arm and the right precordium, and a late negative deflection may be seen over the left ventricular leads. Some such leads obtained over the right ventricle may be triphasic, consisting of an initial positive, an intermediate negative and a final positive deflection, thus assuming in principle, the same shape as is seen in left bundle branch block. In this condition, however, the total duration of depolarization is prolonged to .12 seconds or more and there is also other evidence of myocardial pathology in the segments which register apolarization and repolarization. The latter waves may assume large proportions.

The Left Ventricular Deflections.—Left ventricular hypertrophy results in increased voltage of the action current arising in the left ventricle. Somewhat depending upon and affected by the various factors discussed previously this may be expressed in practically any lead. In the precordial leads the right sided ones may show deeply negative deflections as the current spreads away from the electrode; they may be tall and sharp over the left precordium where the current spreads toward the electrode and the same high voltage may be seen in the left arm lead or the right arm lead depending upon the position of the heart. The right arm lead which registers the cavity potential of the left ventricle as well as of the right may show a deeply negative deflection. However, depending upon the direction of the sum total of the currents, this effect may or may not be marked. Especially, if intraventricular conduction is disturbed, hypertrophy need not cause high voltage in any lead and, on the other hand, favorable conditions between the heart and the electrode may result in quite high voltage from normal beats. Simultaneous hypertrophy of various chambers of the heart may result in less high voltage than if the left ventricle alone is hypertrophied, for current travelling through thick right ventricle away from the left ventricular epicardium will detract from the positive voltage of this area.

The left ventricular complexes resulting from left bundle branch block are somewhat complicated and their description will be deferred.

If part of the left ventricular myocardium has become necrotic as the result of infarction, and the area extends through the entire thickness of the myocardium, that area will act as volume conductor and like a window transmit the potential inside the cavity to the electrode just as the cavity potential is transmitted through the right auriculoventricular opening to the right arm. If the area affected is so large that it overwhelmingly composes the area which faces the electrode, the depolarization wave which is registered will be entirely similar to, and in fact will be, the left ventricular cavity potential; such a large negative deflection without any positive component will indicate that the infarcted area must be quite extensive, especially if such records are obtained from several leads. They help to indicate the extension and location of the lesion.

If the electrode covers partly dead and partly active myocardium side by side it will show evidence of both. As the negative cavity potential is present before, or as early as the current begins to spread through the myocardium, it is recorded first and then follows the record of the depolarization current spreading toward the electrode. Such records consist of an initial negative deflection and a secondary positive deflection. This negative deflection is to be distinguished from the normal negative deflection of the septal current by its size; when it is small the two cannot be differentiated except by correlating evidence, that is, comparison with previous tracings, consideration of the other parts of the ventricular complex and other leads and the history.

If the myocardium is dead through part of its thickness and active through another part, there will be no "window" effect, but the positive potential will not be as large as in muscle which is healthy throughout. Normally the precordial positive deflection gets taller from right to left; if infarcted muscle is present it may get smaller. Such a deflection, behaving in a manner opposite to what would be expected, may be a sign of infarction.

In the limb leads these changes are noted in the left arm lead when the lesion is in the left lateral wall of the heart, in the leg lead when it is on the posterior surface which faces the diaphragm. The chest leads are affected in lesions of the anterior wall. All of these leads should be examined in searching for a lesion, in localizing it and in determining its extent. In some cases additional leads are indicated.

Abnormal Apolarization.—When discussing depolarization previously, it was assumed that this was a complete and continuous process, beginning with a state of complete polarization and proceeding without interruption to a state of complete apolarization. In the electrocardiogram the process would be recorded as movement of the line from the isoelectric level to its extreme excursion above or below the isoelectric level, depending upon the principal direction of the current.

However, now a new concept must be introduced. That description assumes a healthy muscle which permits the process to occur as described. It is, however, possible for part of the heart muscle to suffer physiologic damage which expresses itself as inability of that part to become completely polarized following activity. Thus is created a zone between completely polarized and incompletely polarized myocardium. Here a potential will persist during the polarized resting stage (diastole) which will be negative on the side of injured tissue and positive on the side of healthy tissue. If an electrode is placed parallel to this zone on the side where the injury has occurred, it will, during the (partly) polarized stage register a negative position. As there is no electrical process going on, it will remain constant at a level below the isoelectric line. If the electrode is placed on the other side of this zone where the myocardium is healthy and fully polarized, the line will rest above the isoelectric line for the potential is positive in relation to the rest of the field.

During the stage of apolarization, that is, the period between depolarization and repolarization, there is no potential anywhere and the string will come to rest at the isoelectric level.

To get the picture quite clearly let it be assumed that the myocardium is quite normal. The heart muscle is completely polarized and the doublets are in perfect balance. The line is at the isoelectric level. The muscle is then stimulated and the depolarization is registered. When it is completed the muscle is completely apolarized, no potential obtains anywhere and the line again comes to rest at the isoelectric level until repolarization sets in. When this is completed the heart muscle is again completely polarized and the line is again at the isoelectric level. Now, before the heart is again stimulated, the myocardium is damaged, as described previously, and a zone between healthy and injured heart muscle is established. The baseline is now removed to a state of partial depolarization as has been described. Whether the newly established potential will be positive or negative will depend upon the position of the electrode, as was described. Now, if this partly depolarized myocardium is stimulated into activity it will become completely depolarized just as is healthy heart muscle. There results an entirely apolarized state with the line at the isoelectric level as before. However, repolarization of the injured myocardium is incomplete and the baseline comes to rest in diastole at a level removed from the isoelectric level. This shift of the baseline is called "current of injury."

Therefore, if true electrocardiograms were taken, they would show the current of injury as a shift of the baseline during diastole, with the baseline at the isoelectric level during the apolarized state. Such is, however, not the case. When taking an electrocardiogram it is always necessary to compensate for interfering currents which tend to throw the string off the isoelectric level and, before a tracing is taken, it should rest at this level between complexes. There is nothing to distinguish the current of injury from the other interfering currents and compensating current is introduced to neutralize this as well as the others. The other currents are effective throughout the cardiac cycle but the current of injury does not exist during the stage of apolarization when no potential obtains. However, the current which was introduced to compensate for the current of injury remains, unopposed, during this stage. It displaces the baseline in the direction opposite of the one in which the current of injury would have been effective had it been present. Therefore, in routine electrocardiograms the direct effect of the current of injury is not registered; the effect which is recorded is the displacement of the string by the unopposed current which had been introduced to compensate for it, and which, therefore, acts in the direction opposite to the current of injury.

In actual practice the current of injury may originate in five different locations. The injured tissue may lie on the epicardial surface which faces the electrode, it may lie on the endocardial surface of the wall, the epicardial surface of which faces the electrode; it may lie on the endocardial surface of the wall which lies away from the electrode or on the epicardial surface which faces away from the electrode. Finally, the injured tissue may be entirely surrounded by healthy myocardium as in a case of focal myocarditis or in an intramural infarct.

It is a matter of simple logic to determine the displacement which will result in each case.

If the injured tissue lies on the epicardial surface which faces the electrode, the injured area will be negative in relation to the rest of the field and the baseline will be depressed during diastole; this depression, however, is compensated and what is seen is the upward displacement of the baseline by the compensating current during apolarization and no displacement during diastole.

If the injured tissue lies on the endocardial surface of the wall which faces the electrode, the current of injury causes upward (positive) displacement during diastole, this being compensated for, the change which is seen is downward displacement during apolarization.

Reasoning in similar manner it is clear that injured tissue on the endocardial side of the opposite wall will cause upward displacement, and injury on the epicardial surface of the opposite wall will cause downward displacement during the stage of apolarization.

If the injured tissue is completely surrounded by healthy myocardium, doublets on one side of the injured area will compensate for the doublets which originate on the other side and no effect will be registered on the surface of the heart.

It is obvious from this description that records

of the current of injury will show deviations in opposite directions if the electrode is moved to the opposite aspect of the heart. Thus in the case of a surface infarct the displacement of the baseline during apolarization will be in opposite directions in the precordial and the left foot leads. It will also be in opposite directions in leads taken in the cavity and on the epicardial surface of the affected ventricle. If injury is extensive over various aspects of the epicardial surface, leads obtained anywhere over the injured surface will show positive displacement of the segment of apolarization.

Abnormal Repolarization.—If the conditions of the myocardium are normal and as they are during depolarization, the process of repolarization should spread in the same sequence. However, it spreads more slowly and the deflection which it produces is a slow and gradual process. It has been explained how the polarity which is produced should be opposite to that produced by depolarization, but for some reason which is not understood, this is not the case and over large parts of the heart repolarization proceeds in sequence opposite to that of depolarization. In the interpretation of electrocardiograms the expected direction of the repolarization in a given area must be known.

The process of repolarization is sensitive and easily influenced by factors which may have no effect upon the other segments of the electrical process. Varying degrees of ischemia are important in many of these, but lowering of temperature (drinking of cold water), changes of intraventricular pressure, toxins of many kinds including bacterial and pharmaceutical, and degenerative processes in the myocardium may also be responsible for changes in repolarization.

Because the total potential of depolarization and repolarization is similar, and the areas covered by the two curves are similar, there is, normally, some relationship between their sizes.

There is nothing specific about the manner in which repolarization is affected by the various factors which influence them but sometimes combinations of these changes and changes in other segments of the electrocardiogram may produce patterns which strongly suggest some specific condition. Sometimes changes in repolarization cause the waves to become unusually tall or pointed.

Sometimes changes in repolarization are transitory as when they follow respiratory anoxia or drinking of cold water, sometimes they last for days or weeks as when they are produced by digitalis or infection, sometimes they are permanent as when they are caused by permanent degenerative changes in the myocardium or some cases of infarction.

Thus great caution must be exerted in interpreting changes in repolarization. Serial tracings may be necessary to follow their development.

So far this treatise has been concerned with the principles underlying electrical activity in the heart, the manner in which this activity can be registered and the general principles which underlie changes from the normal as they occur in the various segments of the electrocardiogram. There now remains a specific discussion of the effect of various clinical conditions upon the electrocardiogram.

THE ELECTROCARDIOGRAPHIC CHANGES OF SPECIFIC CLINICAL CONDITIONS

MYOCARDIAL INFARCTION

Myocardial infarction is by far the most important condition in which V-leads have added to accuracy in diagnosis. Especially by taking serial tracings it is now possible to acquire much information regarding location, distribution and development of the process. It is important to bear in mind that infarction may affect all parts of the electrocardiogram. The most sensitive part of the electrical process in the heart is repolarization and the shape of the wave which records it is, therefore, readily affected by any change in circulation. In the polarized state a current of injury may be established between the injured and healthy heart muscle; as explained previously this is, however, registered in the electrocardiogram during the apolarized stage due to overshooting by the compensating current. If the myocardium is dead it will act simply as a volume conductor and it will generate no active current travelling towards the electrode. The changes may occur within the first few hours after the onset of symptoms or they may be deferred for many days; they may last for but a few hours or they may be permanent. It is, then, often necessary to take serial tracings. On the other hand, there is no condition in which electrocardiographic changes occur with such rapidity as they do in myocardial infarction.

In clear cut conditions the changes appear crystal clear, but many disturbing factors may obscure them. Other heart disease may previously have rendered the tracing abnormal and unless records are available from before the onset of infarction, the diagnosis may be difficult. This is especially true in the case of left bundle branch block in which only the rapidity of certain changes reveal the diagnosis. It is also possible for the permanent changes of a previous infarct to obscure the pattern of a recent one. Because of the irregular manner and effects of coronary atherosclerosis it is possible for occlusion of one coronary artery to affect the blood supply to areas not ordinarily supplied by it, or several coronaries may become occluded in quick succession. The result of all this is that the electrocardiogram will show changes indicating the involvement of various areas, as both the posterior and the anterior surfaces of the heart.

Myocardial changes may occur where they are not recorded. They may occur deep in the myocardium and be surrounded by healthy heart

muscle on all sides. Such infarcts may not be recognized in the electrocardiogram. They may be small and face an area not ordinarily facing an electrode. Such infarcts can be "spotted" by placing an exploring electrode in an unusual position. In looking for such lesions it may be necessary to take leads to the left of the standard positions and also at higher levels of the chest.

In milder cases of infarction only ischemia is recorded, being manifested as change in repolarization. Such cases may resemble myocardial ischemia from other causes such as dissecting aneurysm (q.v.).

The changes of pericarditis may resemble the changes of infarction of the epicardial surface of the heart; in fact, sometimes such infarcts are associated with pericarditis. Because of the prevalence of coronary thrombosis it is often assumed that myocardial damage arising from interference with the coronary circulation is caused by this condition. Such assumption has led to many faculty diagnoses. However, many conditions produce electrocardiographic changes which may resemble those produced by coronary thrombosis. Thrombosis may impair the circulation to an extent so limited that a simple transitory ischemia occurs. Such electrocardiograms are similar to those produced by relative ischemia following effort in patients with coronary arteries narrowed by atherosclerosis, or, presumably resulting from coronary spasm, occurring reflexly due to severe abdominal pain (gallbladder colic, peptic ulcer, pancreatitis). During and following tachycardia repolarization may be affected and create difficulty in differential diagnosis between tachycardia producing precordial pain and myocardial infarction producing tachycardia. Disturbances of repolarization from other causes may also at times create difficulties in diagnosis. Embolism of the coronary arteries or trauma of the heart may so severely interfere with the coronary circulation that electrocardiographic changes result which are indistinguishable from those produced by thrombosis. Dissecting aneurysm does not in itself produce electrocardiographic changes in most cases. However, the dissection may extend toward the heart and compress the beginnings of the coronary arteries and thereby produce ischemia, or, the fall in blood pressure which accompanies the aneurysm may cause impairment of the coronary circulation and consequent ischemia. Such changes may produce both current of injury and change of repolarization.

In some cases of myocardial infarction the electrocardiographic changes are so characteristic that they are pathognomonic of infarction but in the large majority the diagnosis must be made, not by the electrocardiogram but by sound clinical judgment, taking into consideration all the evidence of the case.

By electrocardiographic analysis infarcts can be localized routinely in the following areas: anterioseptal, left anterior, lateral and posterior (that is, involving the diaphragmatic surface of the heart).

The anteroseptal infarct generally arises from infarction of the descending branch of the anterior circumflex coronary artery. If the infarction is severe, there will be death of tissue of the septum and the anterior wall of the right ventricle. These will act as volume conductors and the negative cavity potential of the left ventricle will immediately be conveyed to the electrodes in position 2 and 3, and perhaps beyond on either side. Then, as conduction becomes effective through the right ventricle, a positive deflection will appear. Timing of the action currents traversing the right and left ventricles will determine the subsequent deflections; currents travelling through the right ventriclular wall will have a positive effect and currents travelling through the left ventricle away from the electrode will have a negative effect. The deflection will be the resultant of the two forces. Generally, this lesion is associated with evidence of currents of injury arising from the border between injured and healthy tissue and changes in the repolarization curves, arising from the areas which are simply ischemic.

As the electrode moves to the left these changes gradually merge with the normal pattern. If the lesion is strictly limited in extent, the infarct may not change the appearance of leads obtained from the left side of the precordium or from the diaphragmatic surface of the heart, nor from the lateral border. Leads reflecting left cavity potential may not be changed; those reflecting right cavity potential may show little or no evidence of the initial positive deflection if the left cavity potential is immediately transmitted through the inert septum. The segments representing the apolarized state and repolarization will be affected in leads reflecting cavity potential only if the damaged area is sufficiently large to produce changes which dominate those phases.

Records showing infarcts of the anterior wall of the left ventricle are frequently seen. They offer an opportunity to study the degree and extent of progress of infarction for they come closer than do the others to being direct leads. Through leads V3-7 and the left arm lead they will show the changes noted in the general discussion. Depending upon the electrical magnitude of the changes, evidence of current of injury and changes in repolarization may also be apparent in leads obtained from the other, diaphragmatic, side of the heart or the extreme right precordial leads or from leads reflecting cavity potential. In these leads, however, the deflections will be of opposite directions from what they are in the left precordial leads, for all of these electrodes face the endocordial surface of the anterior wall of the left ventricle. For

instance, if a current of injury is registered as an upward displacement of the segment of apolarization in leads V4, 5 and 6 there may be downward displacement of the same segment in leads obtained from the right arm and left leg.

Infarction of the left lateral wall of the heart will be registered not in a semidirect but in an indirect lead. The left arm lead registers impulses from all over the heart. However, impulses which travel through a thick muscle mass directly against the surface of the electrode will be most effective. If the heart is in a transverse position in the chest this condition will apply to the lateral wall of the left ventricle and this activity will, therefore, dominate the picture but the impulses will come from the entire muscle mass and not be dominated by focal changes as in the case with the records obtained from precordial electrodes. If an anterior infarct extending to the lateral wall is of sufficient magnitude, it will affect repolarization or there may be evidence of a current of injury in the left arm lead.

Two normal findings may, however, cause difficulty in the diagnosis of lateral infarcts. With the heart in the transverse position, the left surface of the septum may face the left arm and the current travelling through it may produce an initial negative deflection which may be mistaken for evidence of infarct. Generally this deflection is small but an initial negative deflection of an infarct may also be small and there is no other way, excepting size, in which they differ.

The left lateral wall of the heart is not far from the posterior surface of the heart where the repolarization wave is normally inverted. It is possible that the heart may be so rotated that part of the lateral posterior or posterior surface may face the left arm. In such cases the repolarization wave may be low, isoelectric or even inverted with the myocardium healthy. In the absence of a current of injury there may be nothing to distinguish such an inverted wave from one resulting from infarction.

The surface of the heart which faces the diaphragm is, broadly speaking, the one which is supplied by the posterior coronary artery. Infarction resulting from occlusion of any of its branches will, therefore, be recorded from the electrode placed on the left leg. Of course, if some other part of the heart happens to be facing the diaphragm infarction, that, also, will be recorded by the left leg electrode. This lead also is an indirect one and registers the sum total of all the electrical changes of that surface. Therefore, an infarct must be of some considerable size to be recorded here, yet it is uncommon for it to be so extensive that the myocardium becomes entirely inert. The lead will generally show some positive deflection indicating electrical activity in that area. The typical picture of "posterior" infarct is therefore an initial negative deflection indicating transmission of cavity potential to the surface, a subsequent positive deflection as evidence of electrical activity elsewhere, an elevated segment corresponding to the phase of apolarization as evidence of the current of injury (generally diseased muscle overlies healthy) and inverted wave of repolarization indicating ischemia.

These changes are frequently so severe that they are registered in leads elsewhere; especially may the changes resulting from current of injury and ischemia be seen in the precordial leads. But here the current of injury causes depression of the segment and the wave of repolarization, now being positive, is added to the one produced in the anterior wall and the result is often a tall and pointed deflection. The reason for the reversal of deflection is, of course, that the precordial leads face the endocardial surface of the injured wall.

Thus, by applying the principles embodied in the preceding paragraphs it is possible to form an opinion about severity and extent of a myocardial infarction and, by serial tracings, its development may be followed closely. Sufficient necropsy experience has been accumulated to indicate considerable correlation between electrocardiographic and anatomic changes. There are still some "silent" areas of the myocardium but these have now become quite limited and most of them can be explored by placing the electrode in additional locations.

Pericarditis.—Inflammation of the pericardium generally involves the underlying myocardial surface. Electrically this change is sufficient to cause change in repolarization and also damage sufficient to set up a current of injury. This being on the epicardial surface of the heart results in an upward deflection of the segment of apolarization in the lead obtained over the epicardium. The segment is depressed in leads which register cavity potential. The bulk of the myocardium is not involved and depolarization proceeds normally through it. The electrocardiogram of pericarditis, therefore, consists of normal depolarization curve, of evidence of current of injury, and abnormal repolarization curve. This change is seen as far as the pericarditis extends; it may be generalized and demonstrable in every lead obtained from the epicardium and, reciprocally, in all leads which register cavity potential, for the abnormality is transmitted through the muscle mass. It may also be localized, and localized electrocardiographic changes of this nature have been interpreted as arising from patches of pericarditis of the kind frequently seen at postmortem examinations.

Small areas of infarction may show only current of injury and change in repolarization; they may even be so situated as to result in a small area of pericarditis. In such cases the electrocardiographic differential diagnosis may be difficult but the clinical evidence should be helpful. The changes of extensive pericarditis may resemble

those of infarction, but the absence of changes in the depolarization wave is rare in an extensive infarct.

It is stated that pericardial effusion will "short circuit" electrical potentials between the heart and the surface of the body and thus be responsible for low voltage of the complexes in this condition.

Bundle Branch Block.—In normal hearts the deflection incident to depolarization has returned to the baseline in .06 seconds or less. In cases of hypertrophy it may take longer, up to .10 seconds. If it lasts longer it is considered to be pathologically delayed. Depolarization complexes lasting more than .12 seconds are said to be associated with intraventricular block. In most cases the right or the left bundle is affected, in some such differentiation is not possible. While the presence of intraventricular block may be recognized in the limb leads, differentiation between right and left is made from the precordial leads. In typical bundle branch block curves the repolarization wave is in the direction opposite of the main depolarization wave.

If the right bundle is blocked, the action current spreading to the endocardial surface of the right ventricle is delayed by the block. Records obtained over the right ventricle will, therefore, have three phases: first a positive deflection resulting from the current as it spreads through the septum from left to right, then a negative deflection as the current spreads through the left ventricle away from the electrode and, finally, a broad, slurred secondary positive deflection as the current slowly spreads through the right ventricular myocardium toward the electrode. The size of the original positive deflection depends on the plane of the surface of the electrode in relation to the direction of the current through the septum. If the two are almost parallel the deflection will be small. In such case the M-shape may be difficult to identify.

The contralateral pattern, generally obtained over the left ventricle, consists of two deflections. The septal deflection is frequently absent, probably because there is clockwise rotation of the heart, placing the left side of the septum more or less at right angles to the surface of the electrode. The first deflection is, therefore, positive, recording the spread of current through the left ventricle toward the electrode. Soon this activity is overshadowed by current spreading slowly away from the electrode through the large muscle mass of the right ventricle and there results a large wide slurred inverted deflection. Typically, the repolarization wave is in the opposite direction of the main complex.

Generally the change from the pattern over the blocked side to the contralateral pattern occurs over the middle precordium (positions V3 to V4). The heart is generally so placed that a considerable area of the epicardial surface of the right ventricle faces the right arm. The negative deflection recording cavity potential, therefore, is followed by a wide slurred positive deflection registering current spreading toward it in the right ventricle. The appearance of records obtained from the left arm and the left leg depends upon the position of the heart. Generally the left ventricle faces the left arm and the pattern in general resembles the left precordial leads, and the complex obtained from the left leg electrode is indeterminate because the various forces counterbalance each other. If the heart is more vertical in position, these patterns may be reversed.

In left bundle branch block the conduction through the left bundle is blocked while the current activates the right side of the septum. From there it spreads through the septum from right to left; that is, in the direction opposite to normal, and the spread through the myocardium is delayed. Therefore, there may be time to register the current spreading through the right ventricular myocardium before left ventricular activity is evident.

The pattern typical of left bundle branch block is, therefore, a slurred M shaped complex obtained over the left pericordium. The first positive deflection is caused by the current travelling through the septum toward the electrode, then the negative effect of current spreading away from the electrode through the right ventricle is registered and, finally, the positive effect of the current which slowly spreads through the left ventricle toward the electrode. Sometimes the effect of the right ventricular current is not strong enough to create a marked negative deflection. Its only effect may be to notch the positive deflection to varying extents.

The contralateral pattern is seen over the right side of the precordium. It consists, as would be expected, of a primary negative deflection, a positive deflection and a secondary negative deflection, all of which correspond to the three deflections which have been reversely registered over the left ventricle. However, frequently the negative elements prevail so completely that no positive deflection can be recognized. In such cases the "contralateral" depolarization wave consists merely of a wide deep slurred negative deflection. Left bundle branch block is frequently associated with marked clockwise rotation of the heart and the transition from right to left ventricular pattern may occur quite far to the left. In some cases it is not registered before position seven.

The right arm lead registers the right ventricular cavity potential. All current moves away from this ventricle. Therefore the record obtained here is entirely negative, including that produced by the current through septum and both the right and the left ventricles. The repolarization wave, contrary to the normal wave in this lead, is positive. The position of the heart determines the pattern obtained in the other limb leads. If the heart is in horizontal position the left arm will register a complex from the epicardial surface

of the left ventricle (similar to the left precordial pattern). If the heart is in a vertical position the left leg lead will register this type of complex. The lead which does not register the left ventricular epicardial pattern may show a "transitional" pattern. However, bundle branch block is frequently associated with considerable enlargement of the heart and consequent rotation with the result that deviations from these patterns occur. In such cases reasoning from fundamenal principles will generally explain the findings.

There are other forms of intraventricular conduction delay which are less typical in their pattern. The repolarization waves may fail to indicate a preponderance of the defect in either side, or the deflections may be typical except for the fact that the total duration is less than .12 seconds. The repolarization curves may less definitely take the direction opposite to the main depolarization curve. All of these tracings indicate less clear cut forms of intraventricular conduction, but generally they indicate grave myocardial pathologic condition.

The complexes seen in the Wolf-Parkinson-White syndrome suggest intraventricular conducion delay. However, the time recording auricular-ventricular conduction is short while the entire complex, from the beginning of the auricular wave to the end of the depolarization wave, is of normal duration. The explanation is that the impulse may travel from auricle to ventricle by an unusual path (the accessory bundle of Kent) and thus activate the ventricle early and by an unusual path. In this case the unusual complex would not indicate heart disease. The same may be said of some other complexes which register delayed dissemination in apparently healthy, often young persons. These conditions are probably congenital and without clinical significance.

Myocardial infarction in the presence of bundle branch block.—Because bundle branch block profoundly affects repolarization and produces a current, it may be impossible to diagnose an infarct from changes in these segments in the presence of bundle branch block. However, if changes of infarction are superimposed on those of bundle branch block serial tracings may reveal them because they often change rapidly. The actual experience has been that sometimes the concurrence of the two has shown no sign of the infarct. This is especially the case of left bundle branch block, where the negativity produced by the "window" effect may coincide with the negativity of the current spreading through the right ventricle. Here only serial tracings may offer a due. In other cases the various factors are superimposed in a manner which produced atypical and confusing pictures.

In the presence of right bundle branch block, infarction may produce quite typical features. In posterior infarction the typical configuration of that condition in the left leg lead may be combined with a wide depolarization complex while the precordial leads will show a pattern typical of right bundle branch block. Anteroseptal infarct may also be recorded in the presence of right bundle branch block in the form of initial marked and wide negativity in the leads obtained from the right precordium. This configuration may resemble uncomplicated right bundle branch block in which the initial positive deflection over the right precordium is insignificant. Finally, anterior infarction may show the usual changes over the left precordium. That is, evidence of current of injury and sharply inverted repolarization waves.

Changes Due to Metabolic Disturbances, Drugs and Infections.—A great many factors may affect depolarization and repolarization in the heart with consequent changes in the electrocardiogram. In general these are not specific and their cause must be inferred from the clinical data. Often the changes arise from a combination of effects and all of them depend upon the susceptibility of the heart. In general, these changes serve little purpose in differential diagnosis, but the factors which may cause them should be remembered in order to avoid errors in diagnosis. Some of the causes are rare, others extremely common in the electorcardiographic laboratory. The most common change is change in repolarization. This may be brought about by lack of oxygen as in rebreathing or failure of the lungs to oxygenate the blood or because some more subtle factor affects cell metabolism; hypocalcemia will prolong the entire process and change the path of repolarization; these changes can readily be reversed by intravenous administration of calcium. Increase in potassium level may cause a current of injury and change the repolarization wave so it becomes tall and pointed. Many infectious diseases affect repolarization and cause inversion of its wave; rheumatic fever, diphtheria, pneumonia, trichinosis and many others may have such effects, either because an actual pathologic process such as infiltration with the trichina and the tissue reaction it sets up, or because of a "toxic" effect as is seen in diphtheria or pneumonia while the architecture of the heart remains intact.

Most important is recognition of the changes caused by digitalis. The effect of digitalis which results in electrocardiographic change is not well understood. In toxic doses in susceptible persons it will delay auricular-ventricular conduction or even prevent it. It may irritate the myocardium to activity in ectopic foci. It may profoundly affect repolarization.

In the theoretical discussion it was noted that if repolarization follows the path of depolarization, it should result in a deflection in the opposite direction in the electrocardiogram. The fact that depolarization and repolarization in large parts of the heart result in excursions in the same direction is evidence that the two processes spread in different sequence through the heart. This again must mean that in some individual fibers

repolarization is initiated more slowly than in others. There is reason to believe that digitalis changes this relationship. The actual change which is seen is lowering of the repolarization wave even to the point of inversion, and depression of baseline during the inactive phase. The baseline starts at the isoelectric level and gradually slopes toward and merges with the inverted or diphasic repolarization wave. This shift is entirely different from the current of injury. The "current of injury" reflected during the inactive phase of the electrocardiogram is indirect evidence of changes present during the polarized stage. The shift which is caused by digitalis is part of repolarization process which begins early. It is thought that the entire process of repolarization is speeded up and consequently tends to follow the sequence of depolarization. The more this change prevails the more will the repolarization wave be opposite in deflection to the depolarization wave. At the same time the total time consumed from end of depolarization to complete repolarization tends to be shortened. Depolarization itself is not affected.

Changes resembling those produced by digitalis are frequently evidence of myocardial damage. It is, therefore, assumed that the changes produced by digitalis are also harmful, notwithstanding the a priori reasoning that more prompt repolarization would seem beneficial. It is not normal and is, therefore, considered an undesirable side effect.

Digitalis effect is best seen over the heavy muscle of the left ventricle. To what extent it is focal, regional or general must be the subject of further studies.

This discussion has been limited to such examples as would illustrate the principles with which we are concerned. For a complete catalogue and detailed description of the various factors which may change the electrocardiogram, standard texts should be consulted.

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Mass screening of persons for early detection of glaucoma was suggested by Drs. Solomon S. Brav and Herbert P. Kirber, Philadelphia.

The results of such a test on 10,000 persons have shown that the incidence of undiscovered glaucoma in the general population is approximately 2 per cent, the doctors reported in the Nov. 17 *Journal of the American Medical Association.*

Their study, consisting of persons over 40 years of age, was made at large industrial plants. Of the 10,000 persons examined, 84 showed definite glaucoma, 69 early glaucoma, and 71 were borderline cases, a total of 224 or 2.24 per cent. An additional 100 persons were kept under further observation as possible candidates for the disease.

The doctors pointed out that mass screening of the population has been applied for the early detection of diabetes, tuberculosis, cancer and other chronic diseases.

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CHICAGO MEDICAL SOCIETY

March 4, 5, 6, 7, 1952

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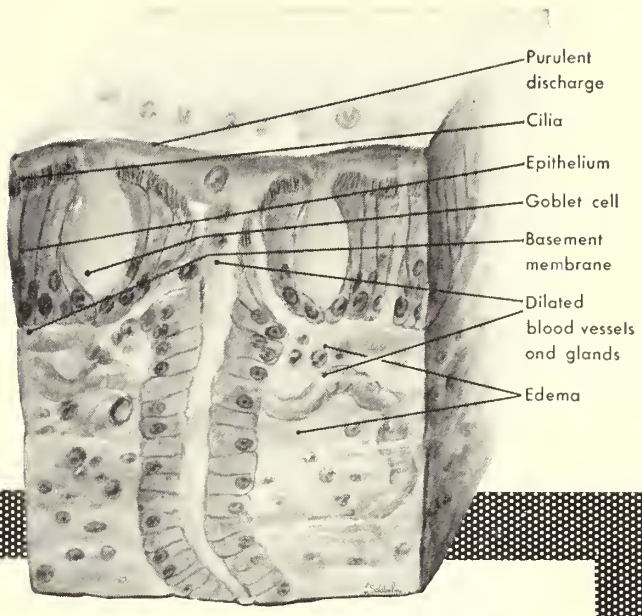
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Council on Pharmacy & Chemistry:
New and Nonofficial Remedies.
1950, p. 218.



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0.125 (⅛)% low surface tension, aqueous solution, in ½ oz. bottles. Particularly acceptable for children.

Water soluble jelly 0.5% in ⅝ oz. tubes.

1. Rehfuss, M. E., Albrecht, F. K., and Price, A. H.: A Course in Practical Therapeutics. Baltimore, Williams & Wilkins Co., 1948, p. 111.
2. Kelley, S. F.: In Cornell Conferences on Therapy. New York, Macmillan Co., 1947, Vol. 2, p. 156.
3. Gold, H.: In Cornell Conferences on Therapy. New York, Macmillan Co., 1947, Vol. 2, p. 151.

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PRESIDENT'S PAGE

It may not be much of an oversimplification to say that the basic social problem of our time is to define the limits of public authority on the one hand and private responsibility on the other. The definition of these limits is certainly the central problem of medicine's public relations.

It is important for all of us in the medical profession to recognize the essential need that exists in many parts of our country—and particularly our state—for increased public health facilities. There is a need for the whole complex of services in the fields of sanitation, food and milk inspection, school health and the like which must be provided by public agencies. Our State Division of Health is aware of the importance of this public health need in many areas of Missouri and is doing good work to foster community and county interest to fill it.



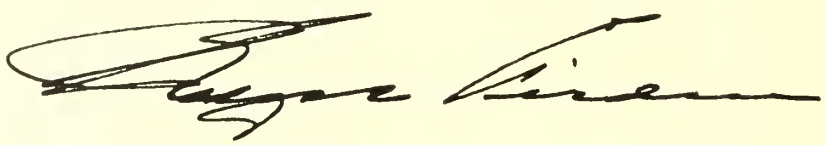
On the other hand, there is a natural and valid concern on the part of the medical profession that provision of basic public health services to the community not extend beyond its proper limits into the field of actually providing medical service to individuals. This latter is the field of the medical practitioner. It must be kept free of public and state encroachment if the values of our individual and dynamic system of medical care are to be preserved.

This question of the proper and complementary areas of public health activity and private medical practice is one that deserves the best thought of every Missouri physician. It is not a question to which a cut and dried answer may be expected. It is complicated by the economic circumstances of many communities and the indigency of certain population groups.

In every area, however, it should be the responsibility of individual physicians to lead rather than to be led in the local efforts to provide sound public health facilities.

The fact is, however, that there are great values to be gained from a proper balance of public and private elements in the field of health. Neither side of this balance can be overweighted without the most serious and far reaching consequences.

It is one of the tasks of the State Medical Association to work cooperatively with state and local authorities and citizens' groups to see to it that the right balance is attained in Missouri and, once attained, to see that it is preserved.



Editorials

ANNUAL SESSION TO BE HELD MARCH 30 THROUGH APRIL 2

The ninety-fourth Annual Session of the Missouri State Medical Association will be held at Hotel Jefferson, St. Louis, from March 30 through April 2. The session will begin with the meeting of the House of Delegates on Sunday, March 30, at 2:00 p.m. A recessed session of the House will be held on Monday at 4:00 p.m. and the final session will be held on Wednesday, April 2, at 1:30 p.m.

The scientific program will consist of addresses by guests from out of the state and by Missouri physicians, symposia running concurrently and round table luncheons. Each session will be opened by a motion picture followed by the formal program. On Monday, following general presentations, two symposia will be presented at 10:30, one on "Obstetrics" and one on "Medicine." Following a round table luncheon at noon at which speakers from the morning sessions will answer questions, the afternoon program will be composed of addresses of practical value on several subjects.

Tuesday will follow the same order with symposia at 10:30 on "Pediatrics" and "Surgery," round table luncheon at noon followed by a general program in the afternoon. On Wednesday the entire morning program will be a general program and beginning at 1:30 p.m. a panel on "What's New in Medicine" will be presented with out of state guests and Missouri physicians giving short presentations in various fields followed by a question and answer period.

The symposia will be presented in each case by one guest speaker and two Missouri physicians giving presentations to be followed by a discussion period which will be open to all for participation.

Louis H. Bauer, M.D., Hampstead, New York, President Elect of the American Medical Association, will be the guest speaker at the Annual Banquet in Honor of Past Presidents. The banquet will be held on Tuesday evening, April 1, at this session rather than on Monday evening as has been customary for several years. C. Edgar Virden, M.D., Kansas City, President, will preside at the banquet and will install J. William Thompson, M.D., St. Louis, President Elect, as President of the Association. Past Presidents of the Association will be the guest of honor.

Scientific and technical exhibits will take up the mezzanine floor and the Ivory Room in the hotel. The House of Delegates will convene in the Crystal Room as it has for several years and the scientific sessions will be held in the Crystal Room and the Gold Room.

The Missouri Society of Medical Technologists will meet again at the same time as the Association and will have lecture sessions on Monday, Tuesday and Wednesday mornings. In the afternoons, special demonstrations will be presented at St. Louis City, Barnes and Firmin Desloge hospitals. Physicians are being asked by the Society to inform their technicians or office nurses of the meeting. Membership in the society is not required for attendance at the meeting.

The Missouri Physical Therapy Association will meet for a one day session, probably on Monday, during the Annual Session.

The House of Delegates has before it a Constitution presented at the 1951 Annual Session and which is printed for the second time in this issue of THE JOURNAL. This is in accordance with the Constitution which provides that any amendment to the Constitution shall have been presented in open meeting at the previous Annual Session and that it shall have been published twice during the year in THE JOURNAL.

AMERICAN MEDICAL ASSOCIATION HOLDS INTERIM SESSION

Los Angeles was the scene of the fifth Annual Clinical Session of the American Medical Association, December 4 through 7. Approximately 4,000 physicians from all parts of the country registered.

A. C. Yoder, M.D., Goshen, Indiana, an 84 year old physician, was elected "family doctor" of the year by the House of Delegates. Dr. Yoder appeared before the House of Delegates the day after his election, having flown out from his native Indiana. He stated that "he looks forward to many more years of service to the people of Goshen."

The first transcontinental transmission of color television was presented at the session. A surgical operation, coarctation of the heart of a 20 year old man, was performed by John C. Jones, M.D., Associate Professor of Surgery at the University of Southern California School of Medicine. The operation was beamed in full color to medical audiences in Chicago and New York as well as Los Angeles. Smith, Kline and French Laboratories, Philadelphia, who sponsored color television at the Missouri State Medical Association meetings sponsored this latest development.

U. S. Senator Robert A. Taft, Ohio's Republican Senator, and Senator Harry F. Byrd, Virginia's Democratic Senator, appeared before a large gathering at a special meeting of the House of Delegates. John W. Cline, M.D., San Francisco, American Medical Association President, introduced the two senators. Dr. Cline said that "it is fitting that the A.M.A. provide a forum for the senators. The A.M.A. is a large, nonpartisan, professional organization, including both Republicans and Democrats."

Organization and Economics

NEWS NOTES

The Board of Trustees of the American Medical Association at a recent meeting decided there would be no fellowship dues for 1952. The Board felt that the dues are no longer required since American Medical Association are now paying membership dues and, further, the fellowship dues requirements were too confusing to members as a whole.

The following physicians were received into fellowship of the American College of Surgeons at a meeting on November 9: Drs. John E. Burch, Joplin; Jack G. Miller, St. Charles; Bernard L. Murphy, Hannibal; Thompson E. Potter, St. Joseph; Garland A. Reynolds, Cape Girardeau; Mitchell D. Johnson, Ferguson; Fred R. Farthing, Robert W. Maher and Edward Marcus, Springfield; John H. Gaskins and Frederick J. McCoy, Kansas City; Edward M. Cannon, Charles L. Eckert, Heinz E. Haffner, William Carl Stude and William L. Tomlinson, St. Louis. Evarts A. Graham, M.D., St. Louis, was appointed chairman of the Board of Regents.

Robert E. Ryan, M.D., St. Louis, will speak before the General Practitioners Study Club of Greater St. Louis on January 16. His subject will be "Headache: Migraine and Its Differential Diagnosis and Treatment."

Otto W. Brandhorst, D.D.S., St. Louis, was elected president elect of the American Dental Association at a recent meeting.

Mr. Ray F. McCarthy, St. Louis, for many years executive director of the St. Louis Blue Cross plan, is now Director of Public Affairs for Radio Station KMOX, the Columbia broadcasting station in St. Louis.

Everett D. Sugarbaker, M.D., Jefferson City, was elected president of the Missouri Division, American Cancer Society, at a meeting held in St. Louis October 31 and November 1. E. Kip Robinson, M.D., Kansas City, was elected a division delegate.

The recently revised federal income tax law provides that persons over 65 years of age may deduct their medical expenses, including health and accident insurance premiums, up to a maximum of $2,500 for an individual and $5,000 for a married couple.

MUSINGS OF THE FIELD SECRETARY

The Bureau of Health Education of the American Medical Association sponsored the third national Conference on Physicians and Schools at Highland Park, Illinois, November 6 to 8. One hundred eighty-three people registered at the conference from thirty-five states, the District of Columbia and Hawaii. They represented one hundred twenty-nine agencies and organizations. The Constitutional Secretary and Field Secretary of the Association attended.

Some statements made at the conference which furnish food for thought follow: The purpose of the conference is to develop cooperation and effective health services for school children. Joint action at state and local levels between health departments, departments of education and medical societies is in general the most feasible method of developing school health services.

It is necessary that community understanding and appreciation of school health services precede or accompany their development.

Broader arrangements for first aid care of pupils should be made in most schools.

Medical progress has brought about less rigid quarantine measures.

The doctor's function in the schools is to conduct preventive services for the benefit of all pupils; caring for sick children is the responsibility of the parents and the physician serving the child and his family. It is important to have the family doctor conduct the health examinations of school children where possible.

Health examinations of school age children have limited value unless an organized program of follow-up is established.

Teachers should have more adequate health education courses in their training.

Physicians, communities and school administrators need to recognize the importance of the teacher's role in health appraisal if conditions in some schools are to be improved.

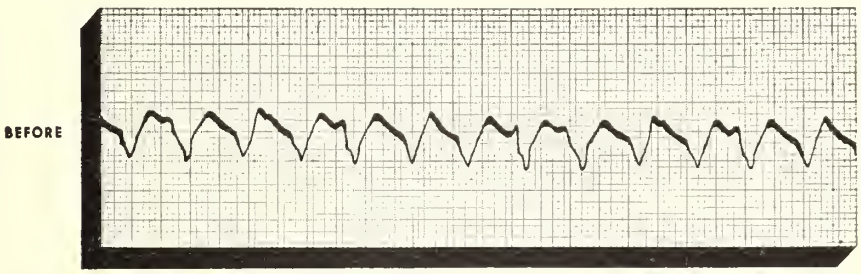
In cities and states with successful school health programs, medical societies were active in the projects.

For best results there is need for interprofessional understanding and cooperation between teachers, nurses, practicing physicians and public health people.

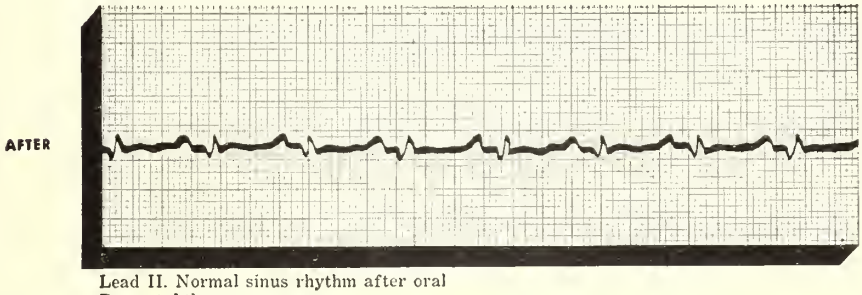
NEW MEMBERS

Bauer, Robert A., M.D., St. Louis.
Brodeur, Armand E., M.D., St. Louis.
Burns, Francis R., M.D., St. Louis.
Canlas, Emilio M., M.D., Poplar Bluff.
Cox, DeWitte W., M.D., St. Louis.
Dawson, Orville L., M.D., St. Louis.
Efron, Joseph, M.D., Rock Hill.
Ellis, Ralph V., M.D., Poplar Bluff.

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Preserved with sodium ethyl mercuri thiosalicylate 1:10,000

Supplied with disposable 1 cc. cartridge syringe.

1. Moss, Henry N., and D'Alessandro, Domenic R.: The intensity and duration of the effect of Depo-Heparin on venous coagulation time in man. Am. Practitioner & Dig. of Treatment 2:309 (April) 1951

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Emerson, Reynolds L., M.D., St. Louis.
Forbes, Kenneth A., M.D., St. Louis.
Fuller, Charles D., M.D., St. Joseph.
Gibstine, Marvin H., M.D., St. Louis.
Henrickson, William E., M.D., Poplar Bluff.
Holt, Earl P., M.D., St. Louis.
Hopkins, Thomas S., M.D., Nevada.
Keating, John U., M.D., New Orleans, La.
(Member St. Louis Medical Society)
Keezer, William S., M.D., St. Louis.
Keller, Maurice J., M.D., St. Louis.
Kirk, John S., M.D., St. Joseph.
Kotner, Irvin A., M.D., St. Louis.
Lenzen, John L., M.D., St. Louis.
Lipton, Harold, M.D., St. Louis.
Lund, Herluf G., M.D., St. Louis
Malinoski, Mitchell V., M.D., Poplar Bluff.
Natoli, William J., M.D., St. Louis.
Peden, Burnet W., M.D., St. Louis.
Rachlin, Maxwell, M.D., St. Louis.
Sargent, Frederick K., M.D., St. Louis.
Sauer, Gordon C., M.D., St. Joseph.
Trueblood, Alva C., Jr., M.D., St. Louis.
Van Wetzinga, R. J., M.D., St. Louis.
Wallace, M. Marvin, M.D., St. Louis.
Wallach, Elliott A., M.D., St. Louis.
Watts, Byron E., M.D., St. Louis.
Webb, Watts R., M.D., St. Louis.
West, Joseph W., M.D., St. Louis.
Wiles, Jack N., M.D., Kansas City.
Yaeger, Gerald A., M.D., St. Louis.

DEATHS

Cole, Paul F., M.D., Springfield, a graduate of Barnes Medical College, St. Louis, 1905; Fellow of the American Medical Association; honor member and past president of the Greene County Medical Society; aged 71; died July 13.

Montgomery, Enoch A., M.D., Unionville, a graduate of Barnes Medical College, St. Louis, 1899; member and past president of the North Central Counties Medical Society; aged 80; died September 18.

Morman, William D., M.D., St. Louis, a graduate of Howard University College of Medicine, Washington, D. C., 1929; member of the St. Louis Medical Society; aged 50; died October 9.

McLoon, Mary A., M.D., St. Louis, a graduate of the University of Minnesota Medical School, Minneapolis, 1923; Fellow of the American Medical Association; member of the St. Louis Medical Society; aged 63; died October 29.

Bohannon, Burton, M.D., St. Louis, a graduate of the Homeopathic Medical College, St. Louis, 1902; Fellow of the American Medical Association; member of the St. Louis Medical Society; aged 74; died November 6.

Knowles, Roy F., M.D., Rolla, a graduate of the National University of Arts and Sciences, St. Louis, 1915; Fellow of the American Medical Association; member of the Phelps-Crawford-Dent-Pulaski Counties Medical Society; aged 61; died November 7.

Harlan, Delly L., M.D., Clarence, a graduate of Washington University School of Medicine, 1925; Fellow of the American Medical Association; member and past president of the Shelby County Medical Society; aged 54; died November 12.

Runde, Frederick W., M.D., St. Louis, a graduate of the Marion-Sims College of Medicine, St. Louis, 1898; Fellow of the American Medical Association; honor member of the St. Louis Medical Society; aged 77; died November 20.

Jackson, Carl A., M.D., Kansas City, a graduate of the University Medical College of Kansas City, 1897; Associate Fellow of the American Medical Association; honor member of the Jackson County Medical Society; aged 74; died November 27.

Boemer, Irving H., M.D., St. Louis, a graduate of St. Louis University School of Medicine, 1915; Fellow of the American Medical Association; member of the St. Louis Medical Society; aged 62; died December 1.

Aldridge, Mahlon R., M.D., Jefferson City, a graduate of the St. Louis College of Physicians and Surgeons, 1907; Fellow of the American Medical Association; member and past president of the Cole County Medical Society; aged 73; died December 2.

Vaughan, John R., M.D., St. Louis, a graduate of Washington University School of Medicine, 1910; member of the St. Louis Medical Society; aged 63; died December 4.

MISSOURI SOCIETY OF MEDICAL TECHNOLOGISTS TO MEET

Practical procedures and lectures for the technologist, office nurse and laboratory worker will be presented during the 94th Annual Session of the Association to be held in St. Louis, March 30 to April 2. The Missouri Society of Medical Technologists will hold its fifth annual session at the time of the Association meeting. Hospital demonstrations and lectures and round table discussions are being arranged by a special committee of the Association in cooperation with the technologists.

Topics and speakers are: "Atypical Acid-fast Organisms Encountered in the Laboratory," Victor B. Buhler, M.D., Kansas City; "Recent Advances in Blood Clotting," Walter G. Rice, M.D., St. Louis; "The Technologist's Role in Identifying Pathogenic Fungi," Mrs. Elizabeth Robben, technologist, St. Louis; "Kidney Function Tests," Hollis Allen, M.D., St. Louis; "Instrumentation in the Medical Laboratory," Theodore E. Weichselbaum, Ph.D., St. Louis; "Rh Antibody Titers," Miss Ruth Ragsdale, technologist, Columbia, "An Evaluation of High Protein Crossmatching," Mrs. Bernice Jenkins, technologist, Kansas City; "An Evaluation of the Plastic Bag in Blood Banking," R. O. Muether, M.D., St. Louis; "Diagnosis of Blood Dyscrasias by Sternal Marrow Aspiration: Its Uses and Limitations," Herbert C. Wiegand, M.D., St. Louis.

Round table panels, scheduled for each morning at 11:15, will consider problems pertaining to hematology, chemistry and blood banking on Monday, Tuesday and Wednesday respectively.

Three hospitals will set up demonstrations in their laboratories. The flame photometer and the Papanicolaou stain will be set up at Barnes Hospital. St. Louis City Hospital will show bacterial antibiotic sensitivity tests and blood prothrombin time technics. Firmin Desloge Hospital labora-

tories will demonstrate the Venereal Disease Research Laboratory's test and blood banking.

Membership in the Missouri Society of Medical Technologists is not a requirement for attendance at the meeting. Physicians are urged to inform their technicians or office nurses about the program and urge them to attend.

THE COUNCIL

The Council met at the Sheraton Hotel, St. Louis, on Nov. 24, 25, 1951, with Victor B. Buhler, M.D., Kansas City, Chairman, presiding. Those present were Drs. Donald M. Dowell, Chillicothe; W. F. Francka, Hannibal; Armand D. Fries, St. Louis; John O'Connell, Overland; J. F. Jolley, Mexico; R. W. Kennedy, Marshall; Victor B. Buhler, Kansas City; E. C. Bohrer, West Plains; C. Edgar Virden, Kansas City; J. W. Thompson, St. Louis; H. E. Petersen, St. Joseph; C. E. Hyndman, St. Louis; R. E. Schlueter, St. Louis; John Mayer, Kansas City; J. H. Summers, Lebanon; W. J. Shaw, Fayette; Robert Mueller, St. Louis; Messrs. Lemoine Skinner, St. Louis; W. H. Bartleson, Kansas City; John G. Miller, St. Louis; Raymond McIntyre, St. Louis; T. R. O'Brien, St. Louis. On Sunday the following attended: Drs. Daniel L. Sexton, St. Louis; R. O. Muether, St. Louis; L. M. Garner, Jefferson City; T. L. Dwyer, Mexico; A. S. Bristow, Princeton.

Report of Field Secretary

Mr. McIntyre reported on meetings since the last Council meeting. He reported that the Missouri Health Council, meeting on September 26, discussed the indigent care problem in Missouri and that a committee from the council would make a study and report back to the Health Council as soon as possible.

Physician Placement.—He reported attendance at a conference called by the A.M.A. on Physician Placement and said that all states did not attempt to place physicians and that Missouri stood well in this work among other states.

White House Conference.—He reported that the Missouri Society for Social Welfare with an Advisory Council of other organizations was working on carrying out the recommendations of the White House Conference, that their child care committee would act as the Executive Committee for this work and that the State Medical Association had no chance of representation as such on this committee should it join the Advisory Council. It was pointed out that two physicians were in position to know the work of the committee, however.

Physician and Schools.—He reported, together with Dr. Petersen, a conference on Physicians and Schools which was held Nov. 6 to 8 under the auspices of the A.M.A. After discussion of the place of the physicians, the public health nurse and others in the problem of health of school children, especially in rural areas, it was decided upon motion of Dr. Virden to refer this to the Committees on Rural Health and on Infant Care for joint study and report to the Council.

Society Meetings.—Mr. McIntyre reported several meetings at which programs of different nature had been presented, as a clinical pathologic conference, wet clinics, heart clinics and panel presentations.

Woman's Auxiliary.—He reported that the Woman's Auxiliary had been furnished speakers for public relations meetings in several places.

University of Missouri Four Year Medical School

Mr. O'Brien said that there was little further to report as Councilors were cognizant that an appropriation of $9,000,000 for a four year medical school with no designated location, was included in an omnibus bill in the House. An exchange of letters between Mr. Powell McHaney, President of the Board of Curators, and Dr. Thompson, relative to the four year school, was reviewed.

Physicians and Military Service

Dr. Mueller reviewed the situation on physicians going into service. He stated that there were 296 physicians registered who were in priority 1 and that of these fifty-nine had been deferred as essential and forty-one had been deferred because of physical disability. He asked that men deferred because of physical disability be given consideration and not criticized because they had not gone into service. He stated that there were fifty-seven in priority 2, 611 in priority 3 and 1,036 in priority 4. Upon motion of Dr. Virden, Dr. Mueller was thanked for his work.

Report of Committee to Study Location of Missouri State Medical Association Office

Dr. Shaw presented the following report of the special committee appointed by the Speaker of the House of Delegates to study the location of the Association office.

"This Committee met on September 30, 1951 at the Missouri Hotel in Jefferson City, Missouri with members Drs. Dowell, Finney, Sale, Yancey, Mayer and Shaw present. Member E. D. Sugarbaker was absent but was interviewed by the chairman of the committee at a later date.

"Each member of this Committee had been furnished reference data relative to this proposal and the action taken at the 1949, 1950 and 1951 meeting of the House of Delegates of the Missouri State Medical Association. Letters from the chairmen of all standing committees had been received and were studied. Letters from other state medical associations that maintain offices in state capitals and from associations that maintain offices in cities other than the state capitals were studied and various state plans compared to that proposed for Missouri.

"The advantages and disadvantages of moving the office of the Missouri State Medical Association to Jefferson City were carefully studied and discussed. The reasons for and objections to a sub-office being opened and maintained in Jefferson City were considered in detail. The cost of this move and the facilities available for an office in Jefferson City were subjected to exhaustive examination.

"After intensive study of the resolution presented in 1951, and those submitted in past sessions with the actions taken by the House of Delegates and the Council and after a sincere effort to include all the implications, originating ideas, and pros and cons of past recommendations, your committee unanimously approved the following report:

"1. This committee does not recommend the removal of the Missouri State Medical Association headquarters to Jefferson City.

"2. This committee recommends that a committee

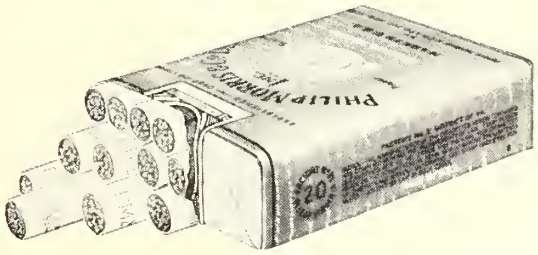
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on Legislation be created by the Council of the Missouri State Medical Association. The Chairman of this committee will be paid executive secretary, who will reside in and maintain an office in Jefferson City, Missouri and who may be a doctor of medicine or a layman. The duties of this executive secretary will be to act as liaison for the Missouri State Medical Association in all legislative matters, to report to the medical association headquarters and to confer with that office on all legislative projects pertinent to the medical profession, and to maintain proper contact with professional and allied groups in Jefferson City."

He stated that reports had been received from twenty-four states which have their offices in the capital of the state, twelve of which are the largest cities in the states. This was discussed by all present in which costs, what other organizations do, advantages in legislative matters as well as disadvantages were brought out. Upon motion of Dr. Thompson, seconded by Dr. Bohrer, it was voted that the Council approve the first recommendation, that the office not be moved to Jefferson City and not approve the second recommendation of having a sub-office in Jefferson City and that the committee be thanked for its work and dismissed.

Audrain County Suit

Mr. O'Brien spoke briefly on the Audrain County Hospital suit, pointing out that it is now on the banc docket of the Supreme Court and that it is possible that a decision may be given on the second Monday in December but more likely that it will not be given until January.

Conference of Presidents

Upon motion of Dr. Petersen, it was voted that $50.00 be appropriated for the Conference of Presidents.

A.M.A. Fellowship

Mr. O'Brien read a letter from the A.M.A. which stated that the Board of Trustees had approved having no fellowship dues in 1952.

Missouri Kansas Membership

Mr. O'Brien reported that a conference would be held between Kansas and Missouri representatives concerning the problem of membership of men on the borderline of the two states; that the conference had been delayed so that it could be placed before the Kansas Council.

A.M.A. Plaque

A plaque for physicians' offices prepared by the A.M.A. was presented which reads as follows: "To All My Patients. "I invite you to discuss frankly with me any questions regarding my services or my fees. The best medical service is based on a friendly, mutual understanding between doctor and patient." It was thought that this could well be advertised in The Journal so that members would know how to obtain it.

A.M.A. Educational Foundation

Mr. O'Brien read a letter from the A.M.A. concerning the American Medical Association Educational Foundation which stated that eleven physicians in Missouri had contributed to the fund; that the largest contribution had been from Iowa with 3.56 per cent of the membership contributing.

Roster

Upon motion by Dr. Petersen, seconded by Dr. Jolley, it was voted to print a roster of members in the February issue of The Journal.

Unlicensed Practitioners

A request from a county society for assistance in deterring medical practice by persons holding no license was presented. In discussion it was brought out that the Association has no disciplining power except with its own members, that such matters have to be handled on the local level through the local prosecuting attorney. Mr. O'Brien said that Mr. Hailey of the Board of Medical Examiners was studying injunction clauses in laws in other states and that they may desire that a bill be introduced.

Radio Programs

Dr. Virden told of radio programs being given by the Colorado Association which are similar to the program "Health and Happiness" which is given in Kansas City. After discussion, on motion of Dr. Petersen, it was voted to ask the Committee on Public Relations to study the possibilities and report to the Council.

Woman's Auxiliary's Radio Program

Dr. O'Connell called attention to the program to be sponsored by the Woman's Auxiliary of the St. Louis County Medical Society of radio transcriptions obtained from the A.M.A. Upon motion of Dr. O'Connell, approval of the program was voted.

American Association of Physicians and Surgeons

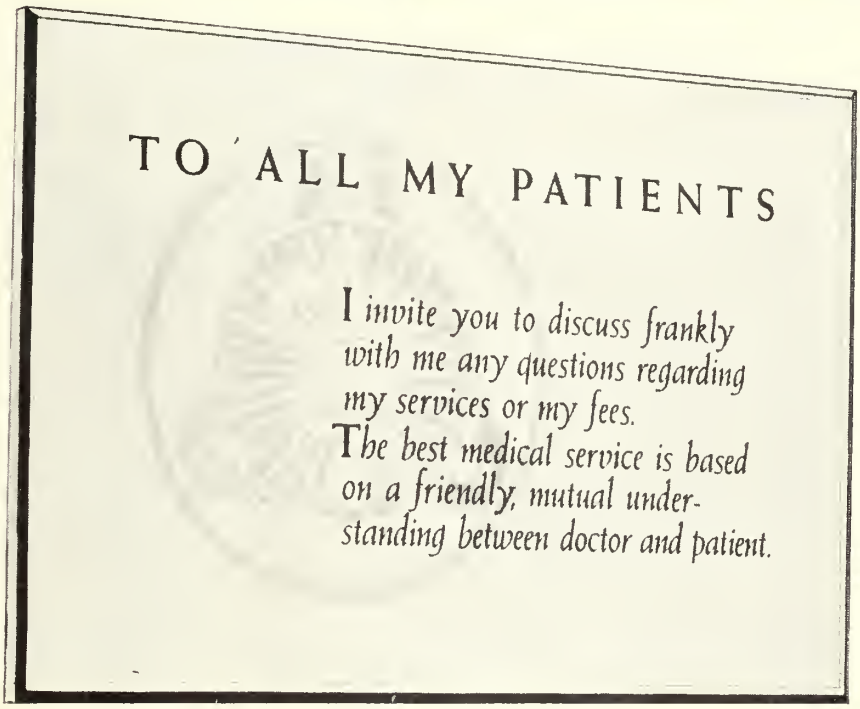
Drs. Bristow and Dwyer asked for endorsement by the Association of the American Association of Physicians and Surgeons. Dr. Dwyer stated that forty states had endorsed the organization but it was not certain whether or not the A.M.A. had endorsed it. Upon request, Dr. Dwyer read the purposes of the organization as follows:

"2. The purpose or purposes for which it is formed are as follows: To supplement the work of existing scientific medical societies by uniting psysicians and surgeons so that they may act effectively in the public interest to improve the quality of medical care; to achieve the universal distribution of medical and surgical care under conditions that will both improve the quality of the service and remove economic barriers to its delivery; to establish general public understanding of and cooperation with the profession in the objectives and purposes of individual and organized activities and to promote ideal relations between the profession and the public; and to protect and improve the welfare and interests of its members in order that the profession may improve the service through the maintenance of professional and ethical standards that will attract the best of men and women to the study and practice of the art and science of medicine, and to that end will stress moral character and ethical attitude of applicants for matriculation as being of equal importance with scholastic attainments. It is committed to policies which give to the individual physician as well as to the patient his freedom of action, so that the traditional relation of physician and patient

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shall be maintained inviolate. The ultimate test of all of its actions shall always be the public interest."

Upon motion of Dr. Petersen, the purposes of the organization as read by Dr. Dwyer were approved.

Journal Changes

Dr. Muether outlined a proposed change in THE JOURNAL in which both news and society proceedings would be carried under the heading of each Councilor District and asked that Councilors take responsibility of getting material to THE JOURNAL and that they ask members of societies in their districts to do this. It was suggested that the Editor also write to county society secretaries. Upon motion of Dr. Petersen, seconded by Dr. Jolley, this change was approved.

Charter

Mr. O'Brien said that Dr. Kane had been advised that some minor changes be made in the Amended Charter. The proposed changes were approved unanimously by the standing Committee on Constitution and By-laws which recommended that it be brought to the attention of the Council for approval. He presented the proposed form as follows:

Amended Articles of Agreement
of the
Missouri State Medical Association

Article I

This corporation, located in the City of St. Louis, Missouri, shall be known by the name and style of the Missouri State Medical Association, and its duration shall be perpetual.

Article II

The purposes of this corporation are: to bring into compact organization the entire medical profession of the State of Missouri, aiding thereby the extension of medical knowledge and the advancement of medical science; to promote and elevate the standards of medical education; to assist in the enactment and enforcement of just medical and public health laws; to encourage friendly intercourse among physicians; to enjoin and sustain measures of interest and advantage to the public and the medical profession; and, to promote the advancement of science, knowledge and skill in the medical profession.

Article III

This corporation shall have all the powers necessary or proper for the accomplishment and furtherance of the above stated purposes and all other powers incidental or related thereto, including but not by way of limitation, the following:

(a) To purchase, receive and take by gift, grant, devise or bequest, real or personal property; to hold, administer, sell, invest and reinvest such property, and to use, disburse and distribute such property, and the income therefrom, for the scientific uses for which this corporation is constituted.

(b) To contract, be contracted with, to sue and be sued, to plead and implead, and shall have the right to acquire, own, hold, mortgage and dispose of such real and personal property as shall be necessary for the proper maintenance and conduct of its affairs.

Article IV

This corporation shall have no capital stock and is not formed or organized for pecuniary profit in any form whatsoever.

Article V

The officers, Directors and Members of this corporation shall be forever exempt from liability for debts and obligations of any kind of this corporation.

Article VI

This corporation shall have power to execute any trust, the purpose whereof is within the purview of Article 352.030, Chapter 352, RSMo. 1949, and within the objects and purposes for which this corporation is formed, and may receive and take by deed, devise or bequest, in its corporate capacity, any property, real or personal, for the uses and purposes of such trust, and to execute the trust so created.

Article VII

This corporation shall have the right to make such rules and regulations as may be necessary to carry out the purposes of the Association.

Upon motion of Dr. Petersen, the changes in the Charter were approved.

Budget

Dr. Petersen gave the report for the Budget Committee and moved the adoption of the following Budget, which was adopted:

Budget for 1952

Salaries	$30,000.00
Journal Expense	21,000.00
Postage, Printing and Stationery	3,000.00
Travel, Executive Secretary	900.00
Travel, Field Secretary	1,600.00
Telephone and Telegraph	1,200.00
Office Rent and Light	3,000.00
Meetings, Committee Expense	14,100.00
Defense	500.00
Scientific and Postgraduate	1,000.00
Woman's Auxiliary	700.00
Public Relations	5,500.00
Insurance Annuity	950.00
Miscellaneous General Expense	1,500.00
Furniture and Fixtures	250.00
Social Security Tax	425.00
Total	$85,625.00

Annual Session Program

Dr. Sexton gave the following report:

"The Program for the 1952 Annual Session is shaping up well and we believe will be a good program. I will not go through the whole program but will report on it in general.

"It was impossible to obtain television again this year and the program will follow to some extent the plan of those prior to the last two years. However, for the first half hour of each session, we plan to have motion pictures. Then on Monday and Tuesday, for the latter part of the morning sessions, we will break the program into two sections or symposia running simultaneously. On Monday we will have symposia on Obstetrics and on Medicine, both beginning at 10:30 and running to noon, with a guest speaker from out of state on each program. On Tuesday, we will have symposia on Pediatrics and on Surgery, each with a guest speaker. At noon of each

of these days we will have round table luncheons with all speakers participating.

"We are going to try having a program during the early part of the afternoon on Wednesday and making it a good program. Possibly, this is pretty much for the St. Louis physician who may find this his first opportunity to get to the meeting but also for those who are not in the House of Delegates but do not leave town until late afternoon.

"It was suggested that there be a round table luncheon also on Wednesday and that tickets for the luncheons should be sold at the time of registration."

A.M.A. Board of Trustees

Dr. Schlueter spoke briefly of the work to come before the Interim session of the A.M.A. and asked the Council if they wished him to attempt to have a Missouri member on the Board of Trustees. On motion of Dr. Bohrer, the Council voted to sponsor Dr. McVay for the Board of Trustees.

Franklin-Gasconade-Warren Counties

Dr. O'Connell reported that Franklin, Gasconade and Warren Counties wished to hyphenate and asked that the Council request the House of Delegates to change Gasconade County from the 5th Councilor District to the 4th District so that this could be done. It was voted that the Council would make this request.

Health Councils and Health Units

At the request of Dr. Hamilton, Dr. Virden presented several problems, the first one on health councils and health units. It was pointed out that the Council had approved Health Councils. After considerable discussion, it was agreed that the Committee on Rural Health be asked to investigate further and furnish information to the Council on the matter of Health Units. Dr. L. M. Garner, of the State Division of Health entered the discussion and answered questions on health units and public health work.

Cancer Detection Centers.—It was decided that consultation should be held with the Missouri Chapter of the American Cancer Society to determine just what standards they had set up and then study this question.

Laboratories.—It was pointed out that by law the state laboratory must make any tests that are requested of it. Dr. Buhler said that the Missouri Society of Pathologists are willing to do any work for indigent patients in the state. It was felt that the methods of procedure for this should originate from the pathologists and that then the Council might be in a position to attempt to obtain legislation that would change the present procedures.

Graduate and Practical Nurses.—After discussion it was decided that the Conference on Care of the Patient be asked to study the situation of the practical nurse and that any action await further information.

Nursing Homes.—It was reported that there is an organization of convalescent and nursing homes which is trying to raise standards of such homes. It was decided to write this organization and offer any assistance that the Association can give.

Barbiturates.—The possibility of the help which state laws would be in barbiturate addiction was discussed. It was decided that the new federal law should be studied and given some time to see if it was effective before anything should be done at the state level.

X-ray Screening.—The x-ray screening of all hospital admissions, as advocated by the Tuberculosis Society, was discussed. It was felt that because of the cost to the hospitals, and ultimately to the patients, that the Council did not have the prerogative to take action on this problem as requested by Dr. Hamilton.

Dr. Virden was asked to report to Dr. Hamilton on the things he had asked discussed and to thank him for his cooperation with the Council, as well as wishing him speedy recovery from his present illness.

A.M.A. Student Organization

Dr. Muether discussed the Student A.M.A. and expressed the opinion that it might be better for students to be made special members of already existing societies. It was suggested that Dr. Schlueter ask that this be discussed at the Interim Session of the A.M.A.

Kansas City Meeting

Dr. Virden invited the Council to hold its next meeting in Kansas City. The invitation was accepted.

CORRESPONDENCE

A Pediatrician Looks at Rural Medicine

JOHN ZAHORSKY, M.D.
STEELVILLE

Emeritus Professor of Pediatrics,
St. Louis University School of Medicine

To the Editor:

Nearly three years ago, having developed clear signs of senescence, I decided to retire to the woods. This was easy for me since I was reared in Crawford County where, also, most of my vacations were spent. Nevertheless, my interest in medical practice did not abate and as the practitioners of the county needed some help, I opened a children's clinic in Steelville three hours a week, now only one hour weekly.

I have become much interested in rural medicine and at odd hours, when I was not studying birds and wild flowers, I accumulated some statistical material on this subject. My sources of information were the Missouri Reports issued by the Division of Health, articles in the *Journal of the American Medical Association* and several pamphlets on osteopathy kindly furnished by W. H. Robey, D. O., Steelville. Of course, interviews with regular physicians, health nurses and parents of my little patients also added to my knowledge. Statistical data were taken from encyclopedias and almanacs in my library. References to The Journal of the Missouri State Medical Association will be found in some of my letters.

The figures used are generally given in round numbers as this study is not offered as a scientific contribution but as an essay that will, I hope, provoke additional studies. I selected counties to serve as standards for comparison of different parts of the state.

Let me emphasize that the term "practitioner" in this study applies to both the regular physicians and the osteopaths. The influence of the osteopaths will be examined critically in another letter. The final

This is the first of a series of letters to the Editor from Dr. Zahorsky. Others will be carried in future issues of The Journal.

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Surgical Technic. Surgical Anatomy & Clinical Surgery, Four Weeks, starting March 3, June 2.
Surgical Anatomy & Clinical Surgery, Two Weeks, starting March 17, June 16.
Surgery of Colon & Rectum, One Week, starting March 3, April 7.
Gallbladder Surgery, Ten Hours, starting April 21.
Basic Principles in General Surgery, Two Weeks, starting March 31.
Breast & Thyroid Surgery, One Week, starting June 23.
Esophageal Surgery, One Week, starting June 23.
Thoracic Surgery, One Week, starting June 2.
Fractures & Traumatic Surgery, Two Weeks, starting February 4.
GYNECOLOGY—Intensive Course, Two Weeks, starting February 18, March 17.
Vaginal Approach to Pelvic Surgery, One Week, starting March 3, March 31.
OBSTETRICS—Intensive Course, Two Weeks, starting March 3, March 31.
MEDICINE—Intensive General Course, Two Weeks, starting May 5.
Electrocardiography & Heart Disease, Two Weeks, starting March 17.
Gastroenterology, Two Weeks, starting May 19.
Hematology, One Week, starting June 16.
UROLOGY—Intensive Course, Two Weeks, starting April 28.
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conclusions will be definitely personal, which may or may not be accepted by the profession generally speaking.

"We Need More Doctors" is the heading of a splendid article by F. D. Murphy, M.D., Kansas City, Kansas, in the *Saturday Evening Post* (May 26). The popular medical writer, Paul de Kruif, has contributed a short article on this subject to the June number of the *Reader's Digest*. The medical journals have been interested in the shortage of doctors for several months. Even the conservative *Journal of the American Medical Association* has become aroused. Most of the articles have been written by residents of a metropolitan area and, consequently, they do not know the rural happenings. The large cities in Missouri have one doctor to every 500 inhabitants while many of the rural areas are still depending on old home remedies, where there is only one M.D. serving 4,000 inhabitants.

I confess that I cannot appreciate the self satisfaction of some of our leaders when they repeat the story that the United States has more doctors per thousand than any other nation. We need more. We are doing a big job but, as a matter of fact, our rural population has to be satisfied with one physician to every 2,000 inhabitants and this, in the state, includes 1,000 osteopaths. The cities of St. Louis, Kansas City, St. Joseph, Springfield, Joplin, the large cities, are served by 3,000 practitioners while the rural areas, 2,000,000, get along with 1,000 physicians, one to 2,000. Some counties seem to survive with one practitioner to 4,000 population.

The State of Missouri

The population of Missouri (I do not have the figures of the 1950 census) is about four million, about half of which is regarded as urban and the other half rural. The population of St. Louis and St. Louis County is approximately 1,200,000; that of Jackson County, including Kansas City, about 500,000; to which add 100,000, the population of Buchanan County including St. Joseph; 100,000 population of Greene County with Springfield, and Jasper County including Carthage and Joplin, thus making about 2,000,000, one half the population of the state. In fact, the Missouri Division of Health regards the urban and rural population as equal for statistical purposes.

It is well known that many of the counties contain large cities—30,000 or more within the rural area. They number about sixteen and, altogether, make a sum of 500,000. It is more accurate, therefore, to put the urban population at 2,500,000 and the rural inhabitants at 1,500,000. Even this is too large as Missouri contains about seventeen counties that have a population of more than 20,000 each with a thriving city. Actually, Missouri is only about one third "rural," but here I will adopt the plan of the Health Division of Missouri, the rural area contains about 2,000,000 inhabitants.

The Medical Directory of the American Medical Association gives the number of physicians in this state as 5,000, but certifies that 2,000 of these are not engaged in actual practice since many physicians have retired or hold teaching or government positions. This would give one physician to every 1,300 inhabitants. Actually one should add the osteopaths, about one thousand, then the ratio would be one to 1,000.

Let me present figures from the major cities. St. Louis and suburbs are served by about 2,400 physicians; hence the ratio is 1 to 500; Kansas City has about 1,000 legal practitioners, ratio 1 to 500; St. Joseph and County ratio is 1 to 600; Springfield ratio is about the same, 1 to 600; Jasper County, a little less, 1 to 700. It seems obvious that the urban areas have plenty of doctors—M.D.'s and O.D.'s.

Parenthetically, let me point out that the surplus of physicians in metropolitan areas is chiefly due to the growth of specialism. The continued increase of physicians in metropolitan cities is stimulated by the rapid growth of the population and the division of medical services. Of course, the practice of the specialist ranges more than 100 miles beyond the city. Patients get better service by having two or more examinations by specialists. Whereas fifty years ago a well trained physician made a diagnosis on one or two examinations, now the radiologist, pathologist and internist, one after another, are consulted. The laboratory and special instrumental examinations give additional clinical aid, and are generally accepted by the patient. It really takes two or more doctors to make a diagnosis. Despite the fact that the general practitioner has fought the increasing growth of the specialties, they continue to multiply.

In a study of the second class—counties with 30,000 population or more—a shrinkage of doctors is noticeable, 1 to 900. Most of these counties are well supplied, a few only, as the counties of the southeast, Dunklin, Stoddard, Scott, show a dismal deficiency.

Counties (sixteen in number) having 20 to 30 thousand population show a greater decrement and the ratio has become 1 to 800. From this and other considerations I have adopted 1 to 1,000, the ratio of doctors and people as a desirable standard; that is, any region, towns and rural district, should support one practitioner to each thousand inhabitants.

As has been indicated, the ratio of practitioners to population in rural districts is near 1 to 2,000 or even less.

Let us compare the death rates of Missouri and the adjoining states for the year 1946. Illinois and Missouri stand about the same, 11.2. Iowa shows 10.1 and Kansas 9.7. Oklahoma stands lower 8.4, but the lowest of all is that real rural state, Arkansas, 7.6. We cannot declare that the low death rate of Arkansas is caused by an excess of regular physicians. The absence of large cities, the preponderence of negroes and the warmer climate may be the decisive factors, but there are only 1,500 regular physicians for 3,000,000 inhabitants.

Yet the birth rate of Arkansas is higher than this state, 24. Missouri is the lowest 21.6, which also points to the influence of urban life. Even Illinois in 1946 exceeded Missouri, namely 22. Still we need not despair, the birth rate in Missouri rose to 24 in 1947, but declined to 21 in 1948. The death rate has almost uniformly remained at 11.4, but did drop lower in 1948, namely 10.9. One figure was startling, the higher maternal death rate in Missouri. The State Health officers have proudly exhibited the figure "one" for 1946, that is only one mother died in one thousands births in Missouri. It really is regretful, but my chosen Ozark ten counties disgraced us by six deaths in about 2,500 live births, that is 2.4 deaths per thousand births. In 1946 these counties had the same number of deaths but differently distributed. Why?

Deaths from pneumonia also were high. The average was a rate of 63 per hundred thousand, the state

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average was 41 (broncho-pneumonia and lobar pneumonia). The average of the Ozark group was 63.4. Do all the Ozark physicians know the modern treatment for pneumonia or are only old folks living there?

I had another shock in studying the Missouri statistics. Reynolds County in the year 1948 suffered a death rate of 142 from pneumonia. I thought at first that this was an error, but other figures from Ripley County, 144; Wright, 71; Douglass, 73; revealed that a virulent epidemic raged in the winter and spring of 1948. This conclusion is confirmed by examination of the death rate in Butler County with its large city (Popular Bluff contains several hospitals). In that county the death rate from pneumonia reached 100.

Curiously, Oregon County escaped this calamity, its death rate was 26, which is puzzling. Shannon County did not report the number of deaths from this disease. Crawford County also displayed a big number, 67. Yet the death rate from pneumonia in Greene County (Springfield) was only 35.

Another valuable measure of medical efficiency are the neonatal deaths which include the prematurely born. The number is surprisingly low, the average being only 26. In this test, Crawford County did not get a prize; for the year 1948 the neonatal death rate was 45. Balancing this number with that of 1946 (the number was 13.4) does improve the conclusion. The average for the state was 23.1. I judge that the care of infants prematurely born needs assistance in some rural areas.

Another comparison was made, namely, the life and death figures in another section of the state, that is, ten counties having about the same population. I chose the following counties in North Missouri: Scotland, Clark, Knox, Shelby, Macon, Sullivan, Putnam, Mercer, Lewis and Monroe. This district is somewhat smaller in population, about 97,000 to the 110,000 in the Ozark district. The birth rate is much less, averaging 18 per thousand inhabitants. Four maternal deaths were reported in 1,850 live births, nearly the same mortality as in the Ozark group. The neonatal deaths averaged 45 (too high). Pneumonia showed a death rate of 33 (whole state corresponding number was 41). The total death rate (12.7) was higher than the Ozark number (9.5).

If we discount that epidemic of pneumonia in the southern counties, the northern counties show no definite superiority.

One huge difference stares us in the face. The northern counties are well supplied with practitioners. For the 100,000 inhabitants are served by 50 M.D.'s and 70 osteopaths. That is, the ratio of practitioner and population was 1 to 900. Compare this with the Ozark group with 1 practitioner to 2,000 inhabitants.

Another comparison is instructive, namely the relative birth rates, death rates and pneumonia fatalities in the two cities having about one hundred thousand inhabitants:

Greene County birth rate 25.4; total death rate 10.7; and death rate from pneumonia 35 (residents).

Buchanan County birth rate 17.5 but about the same for total death rate and pneumonia. The resident maternal deaths are zero for Greene County and 1 for resident Buchanan County, but Springfield had four deaths recorded (outside patients) and Buchanan County two deaths.

The neonatal deaths are important statistically: Ten Ozark counties give a death rate of 17 (Crawford County 41); Springfield with county, 21; Buchanan County 25. The conclusion is justified that despite the scarcity of physicians in some Ozark regions the service to the newborn, as judged from the statistics, is satisfactory.

There is another method by which we may form an opinion and that is to study the two main causes of death. Inasmuch as heart disease and cancer demand early recognition and treatment, may a neglect of these diseases make an impression on the death rate?

My Ozark counties in 1946 showed a cancer death rate of 110 and 1948 the number per hundred thousand was 95. Compare this with the St. Louis numbers of 175 and 188. Facetiously, I may state that if you fear cancer move to Shannon County. The cancer death rate there was only 56 in 1948. Reynolds County was almost as good with 65. These figures are only about one third of the cities and counties, like Crawford County, which disgraced us with a large number, 180. Why? But Shannon County had a total death rate of 6.7, compared with 13. of Crawford County. Why?

Washington County with a population one third larger, only one regular doctor to 4,000 inhabitants, outclassed this, only 98 in 1946 and 60 in 1948. By the way, Greene County has the usual city numbers: 130 cancer, 365 heart disease. Are these differences due to more exact diagnosis? Possibly. The conclusion is forced on us that cancer and heart disease occur less frequently in the Ozark counties.

In comparison, the northern group of counties do not have the low cancer death rate. Thus Macon County (1948) shows these numbers: 169 and 439, it seems urban for it contains a large city. Sullivan astounds us with these numbers: 209 and 383. Lewis County, 107 and 510, total death rate 16.5. Putnam, 178 and 399. Monroe, 151 and 517. Shelby, cancer 315 and heart disease 304.

One need not inquire further. In North Missouri cancer and heart disease are prevalent. Why? These counties have about the same population as those selected in the Ozarks.

COUNCILOR DISTRICT NEWS

FIRST COUNCILOR DISTRICT

DONALD M. DOWELL, CHILLICOTHE, COUNCILOR

The St. Joseph Clinical Society held its annual fall session in conjunction with the First Councilor District of the State Association at Hotel Robidoux, St. Joseph, on November 8. Despite snow and other aspects of winter's disposition, some one hundred twenty-five physicians from Northwest Missouri attended.

The program was initiated by a noon luncheon. Those appearing on the afternoon scientific program were: J. William Fleming, Jr., M.D., Moberly; Joseph C. Jaudon, M.D., St. Louis; William C. Eller, M.D., Waterloo, Iowa; Gerald L. Miller, M.D., Kansas City, and Ruben Flocks, M.D., Iowa City, Iowa.

A social hour preceded the dinner and evening program. Donald M. Dowell, M.D., Councilor of the First Councilor District, discussed a number of important organizational matters at this session. R. Russell Best, M.D., Omaha, Nebraska, gave the concluding scientific presentation.

Donald M. Dowell, M.D., Councilor.

SECOND COUNCILOR DISTRICT

W. F. FRANCKA, HANNIBAL, COUNCILOR

On Sunday afternoon and evening, November 18, the Second Councilor District staged its first Sunday meeting. It was attended by some thirty doctors. The afternoon program consisted of a panel discussion on



The panel which furnishes the scientific program was composed of Herbert C. Sweet, M.D., John P. Wyatt, M.D., Paul Murphy, M.D., Joseph L. Lucido, M.D., and William A. Werner, M.D., St. Louis.

"Pulmonary Diseases" with the following physicians composing the panel: Paul Murphy, M.D., internist, moderator; William A. Werner, M.D., internist; Joseph L. Lucido, M.D., thoracic surgery; John P. Wyatt, M.D., pathologist, and Herbert C. Sweet, M.D., internist, all of St. Louis.

Each member of the panel first gave a short talk on what was new in his particular phase of the subject, after which the panel became fully occupied with questions from the audience.

A well received social hour bridged the afternoon



A portion of the audience which attended the meeting of the Second Councilor District.

and evening sessions. Following dinner the evening program was presented by C. Edgar Virden, M.D., Kansas City, President, who discussed developments in the proposal for a state four year medical school.

W. F. FRANCKA, M.D., Councilor.

THIRD COUNCILOR DISTRICT

ARMAND D. FRIES, ST. LOUIS, COUNCILOR

The career of Dr. William Beaumont, early St. Louis surgeon, was discussed by Federal Judge George H. Moore at a graveside service in Bellefontaine Cemetery, St. Louis, on November 21, marking the 166th anniversary of Dr. Beaumont's birth.

Wendell G. Scott, M.D., St. Louis, delivered the annual memorial Pancoast Lecture before the Philadelphia Roentgen Ray Society on November 1. He spoke on "Technic and Applications of Cardiovascular Angiography and Retrograde Aortography in Congenital Malformations of the Heart."

Frederick A. Jostes, M.D., St. Louis, was elected first vice president, and Alphonse McMahon, M.D., St. Louis, chairman of the board of the Mississippi Valley Medical Society. Daniel L. Sexton, M.D., St. Louis, is president.

FOURTH COUNCILOR DISTRICT

JOHN O'CONNELL, OVERLAND, COUNCILOR

St. Louis County Medical Society

The St. Louis County Medical Society held its regular meeting on November 28 at the Auditorium of the Health Center, St. Louis County Hospital, with forty-six present.

Dr. W. H. Bailey, President, reported for the entertainment committee on the installation dinner stating that it was impossible to obtain a place for January 9 and suggested that it be held on January 10 at the Sheraton Hotel.

A letter was read from the Honorable Joseph M. Darst, Mayor of St. Louis, regarding an Institute on the National Observance of Human Rights Day to be held on December 10 at Kiel Auditorium. The secretary was asked to answer the communication stating that the Society will cooperate with the institute by endeavoring to have some members present.

A letter was read from the St. Louis County Junior Chamber of Commerce regarding the search to find the most outstanding man in St. Louis County for the year 1951.

A letter from the Committee on Alcoholism of the State Association was read and referred to Dr. Joseph Kendis who is a member of the committee.

Dr. A. J. Steiner, M.D., St. Louis, was the scientific speaker and spoke on "Common Chest Diseases Frequently Seen by the General Practitioner."

Following adjournment refreshments were served by the Woman's Auxiliary.

M. A. DIEHR, M.D., Secretary.

The Quarterly meeting of the Phi Chi Medical Fraternity was held at the home of John A. Virant, M.D., Clayton, on December 6.

Mrs. Richard Sutter, President Elect of the Woman's Auxiliary to the Association was appointed councilor of the State of Missouri to the Southern Medical Association at a meeting in Dallas on November 7.

M. A. Staehle, M.D., St. Louis, was elected first vice president of the General Practitioners Study Club International at a meeting in Rome, Italy, in September. R. A. Walthers, M.D., and John O'Connell, M.D., Overland, also attended the meeting.

FIFTH COUNCILOR DISTRICT

J. F. JOLLEY, MEXICO, COUNCILOR

In spite of the inclement weather fifty-five physicians attended an evening meeting of the Fifth Councilor District at the Missouri Hotel, Jefferson City, on November 15. Preceding a turkey dinner, a pleasant social hour was enjoyed.

The formal program follows: C. Edgar Virden, M.D., Kansas City, President, discussed various issues of the proposed four year state medical school.

Carl E. Lischer, M.D., St. Louis, spoke on "Pancreatitis."

Paul O. Hagemann, M.D., St. Louis, spoke on "Antibiotic Therapy."

J. F. Jolley, M.D., Secretary.

Boone County Medical Society

The Boone County Medical Society held its final meeting for 1951 at the Daniel Boone Hotel on December 4 as a dinner meeting. Thirty-four were present. Guests were J. F. Jolley, M.D., Mexico, Councilor of the District, and Henry Schwartz, M.D., St. Louis, who will become the Chief Surgeon of the Ellis Fischel State Cancer Hospital on January 1.

The following officers were elected: President, O. F. Bradford, M.D., Columbia; vice president, Horace Thomas, M.D., Columbia; secretary, Charles Lamke, M.D., Columbia; delegate, A. R. McComas, M.D., Sturgeon; alternate, J. W. Allee, M.D., Columbia. Charles Leech, M.D., Columbia, was elected to replace the retiring member on the board of censors.

Three new members have been elected recently: Glenn McElroy, M.D., Charles Scheuber, M.D., and Margaret Wendell, M.D., Columbia.

James C. Cope, M.D., Secretary

SIXTH COUNCILOR DISTRICT

R. W. KENNEDY, MARSHALL, COUNCILOR

Thirty-five physicians were present at the dinner meeting of the Sixth Councilor District at the Country Club, Nevada, on November 29. An enjoyable social hour, with the local druggists contributing the social catalyst, preceded the dinner.

The formal program was presented by Carl R. Ferris, M.D., Kansas City, who spoke on "Antibiotic Therapy" and C. Edgar Virden, M.D., Kansas City, President, who discussed "A Four Year State Medical School for Missouri."

R. W. Kennedy, M.D., Councilor.

SEVENTH COUNCILOR DISTRICT

VICTOR B. BUHLER, KANSAS CITY, COUNCILOR

EIGHTH COUNCILOR DISTRICT

W. S. SEWELL, SPRINGFIELD, COUNCILOR

C. Souter Smith, M.D., Springfield, was named "Woman of the Year" by the Women's Civic Club Council of Springfield and the award was presented at a dinner on November 1. The citation read "She is her brother's keeper" and "has done it unto the least of these." This was the fourth award presented by the council.

NINTH COUNCILOR DISTRICT

E. C. BOHRER, WEST PLAINS, COUNCILOR

South Central Counties Medical Society

The South Central Counties Medical Society met for dinner at the Horton Hotel, Willow Springs, on November 21 with the following members and visitors present: Drs. R. W. Denney, S. W. Connor and A. C. Ames, Mountain Grove; T. J. Burns, Houston; M. B. Perkins, Willow Springs; E. C. Bohrer, Rollin H. Smith and C. T. Callihan, West Plains; C. W. Cooper, Thayer; Wilbur J. Marshall and Glenn Turner, Springfield, and several of their wives.

The meeting was called to order by the president, Dr. Burns, in the office of Dr. Perkins. The minutes of the last meeting were read and approved. The application for membership of Dr. T. R. Skaggs, Mountain View, was presented with a letter from the secretary of the Saline County (Illinois) Medical Society stating that he is a member with dues paid to the end of this year. The application was referred to the board of censors.

The meeting was then turned over to the guest speakers. Dr. Turner presented the subject "Pericarditis" and Dr. Marshall that of "Jaundice" in which they showed a number of chest films and electrocardiograms and reported some of the mistakes in diagnosis.

An expression of appreciation was given the speakers and the meeting adjourned to meet in West Plains on December 19.

A. C. Ames, M.D., Secretary.

S. W. Connor, M.D., Mountain Grove, is reopening the Ryan Hospital in Mountain Grove which has been closed for some time due to the health of its owner, R. A. Ryan, M.D. The hospital will have nine beds and four bassinets and will be open for use to all legally registered M.D.'s.

TENTH COUNCILOR DISTRICT

FRANK W. HALL, CAPE GIRARDEAU, COUNCILOR

BOOK REVIEW

Eyes and Industry, formerly Industrial Opthalmology, by Hedwig S. Kuhn, M.D., Industrial Opthalmologist, Hammond, Indiana. With 151 Text Illustrations including 3 color plates. Second Edition. C. V. Mosby Company, St. Louis. 1950. $8.50.

With the introduction of a second edition, the author has seen fit to change the name of the work and to add a valuable chapter on illumination together with an enlargement of the work dealing with the blind in industry.

These changes have enhanced the value of the book. However, many criticisms made by reviewers of the first edition have been lost in the maze of statistical pages, charts and forms, and excellent photographs of the worker at his bench. Even in the introduction to the second edition, the author makes no mention of the constructive remarks of the reviewers of the first edition.

In the 377 pages much of the practical and non-theoretic side of the eye in industry has been lost sight of, probably because of the influence of the academic philosophy of her collaborators at Purdue University. In spite of these drawbacks, the book, being the first in the United States concerning the eyes and industry, serves as a valuable preliminary work in a field which should become more and more important within the near future. L. L. M.

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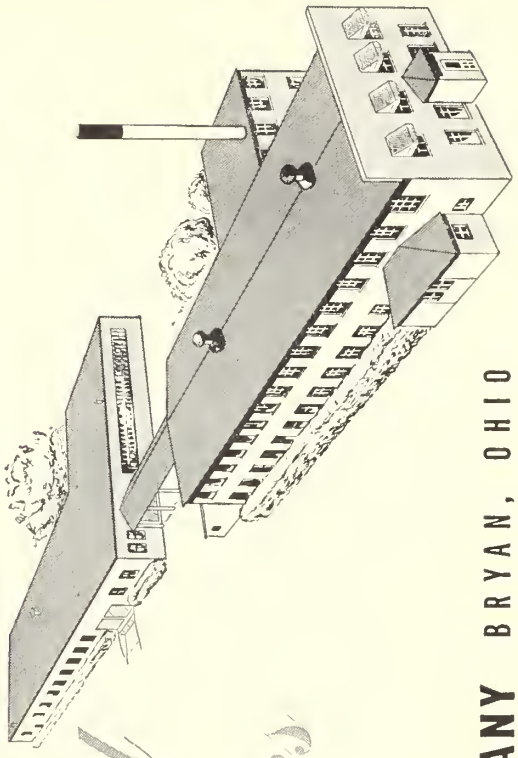
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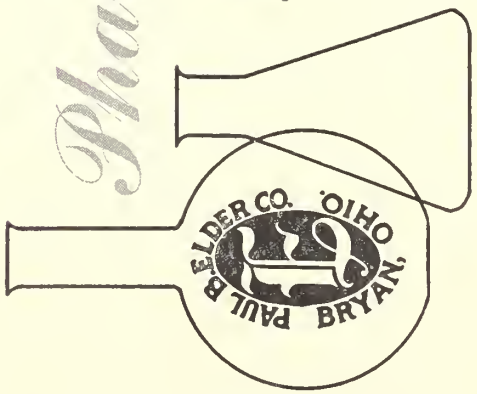
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Subscription: $3.00 per year; 40 cents per copy.

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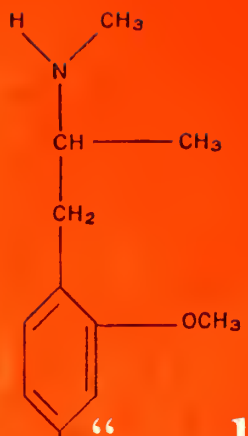
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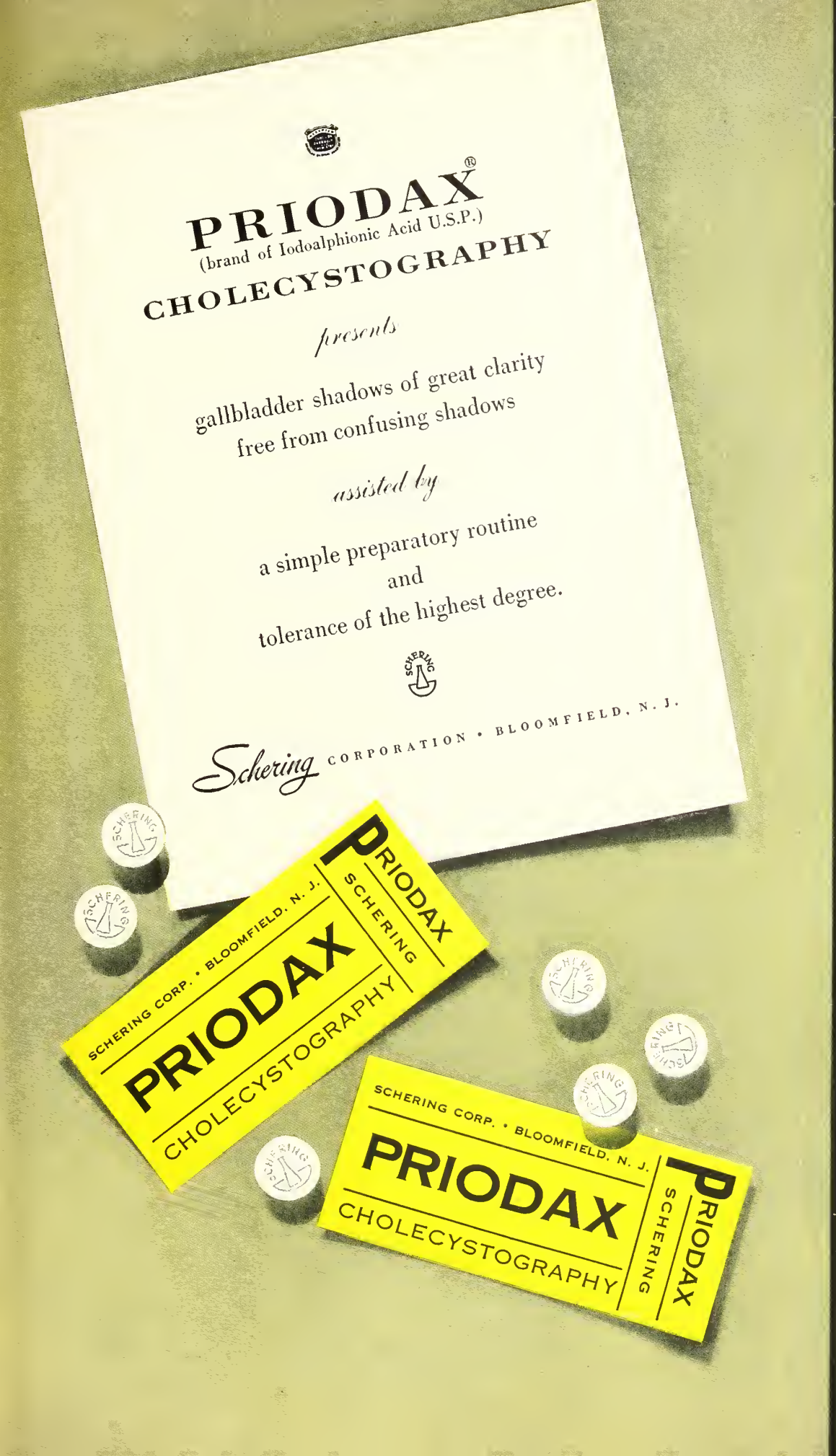
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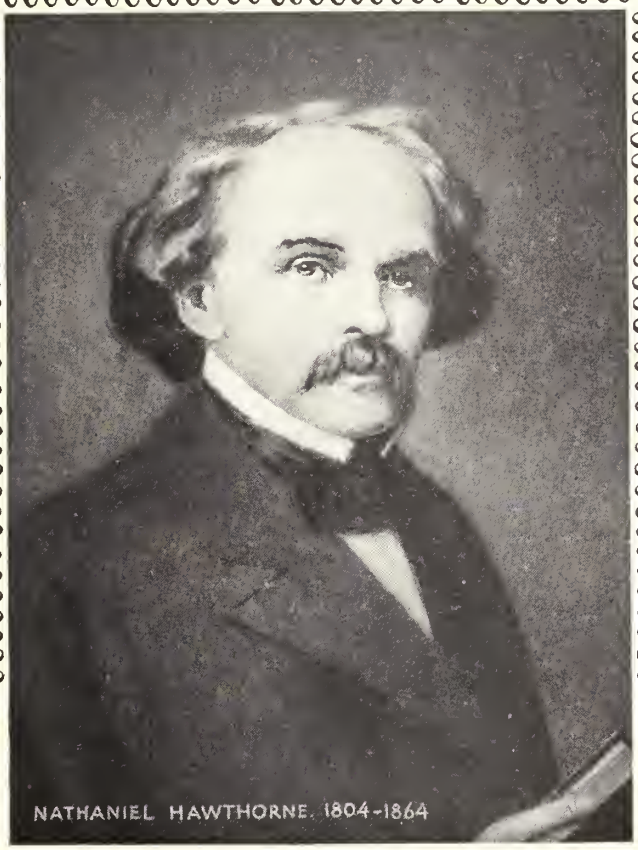
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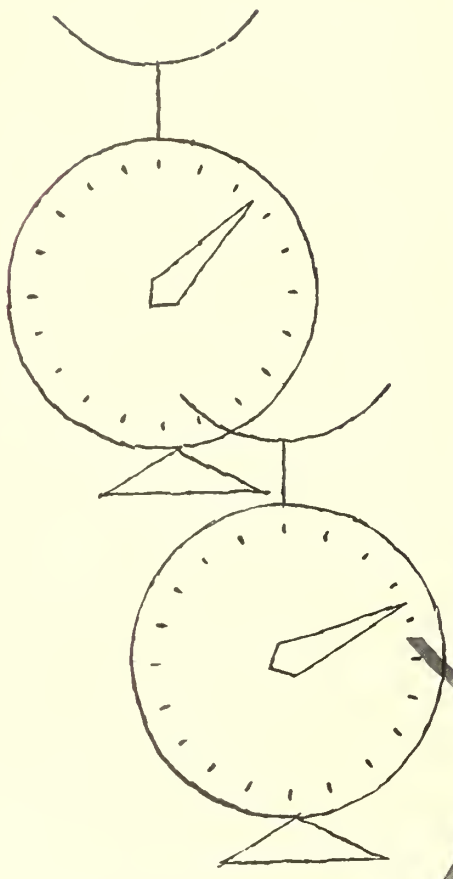
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3 Bull. National Research Council No. 119 Jan. 1950
4 Recommended Daily Dietary Allowances, Revised 1948, Food and Nutrition Board, National Research Council

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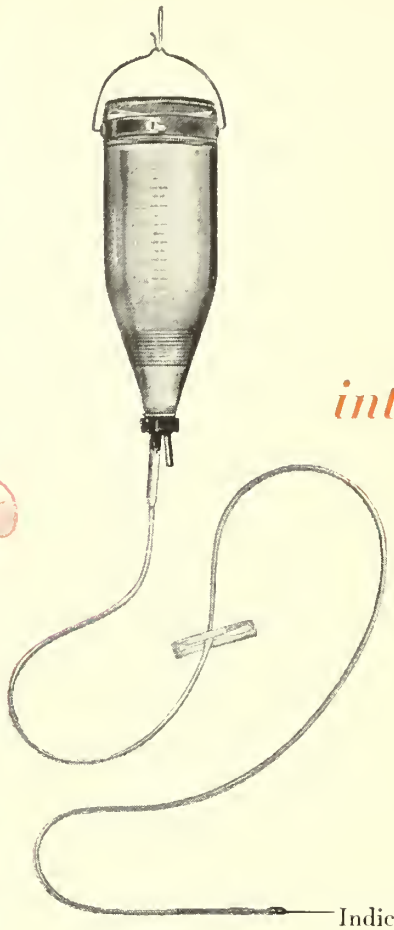
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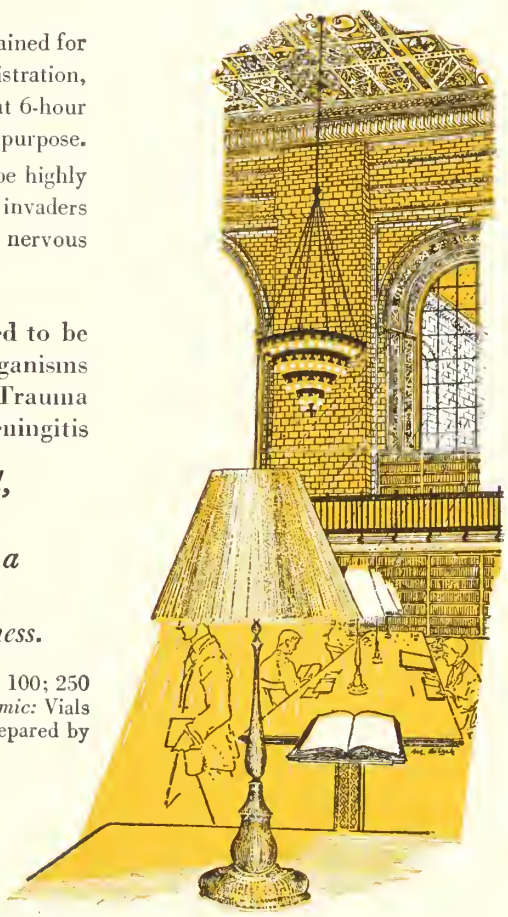
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THE JOURNAL

OF THE

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Volume 49 February, 1952 Number 2

Scientific Articles

OBSERVATION ON THE USE OF CORTISONE AFTER ORTHOPEDIC OPERATIONS AND MANIPULATIONS

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ST. LOUIS

STIMULATED BY the repeated observations that when treated with moderate doses of cortisone (50 to 100 mg daily maintenance dose) many patients suffering from an active rheumatoid arthritis experience a temporary remission of the disease with decreased periarticular swelling, decreased pain and increased movement and improved function in the involved joints, cortisone has been administered to a number of patients with the hope that it might lessen the postoperative swelling and pain, lessen the development of adhesions in and around joints and tendons and shorten convalescence and render it more smooth.

There should be some concern on account of the reports by Ragan et al.[1,2,3,4] to the effect that cortisone interfered markedly with wound healing both in experimental animals and in patients. They produced defects in the skin in the ears of a series of twelve rabbits and then treated one half of the animals with cortisone, injecting 25 mg. daily and observed the rate of healing in the two groups. They noted delay in the healing and a depression in the new growth of all elements of connective tissue in the treated animals. Likewise, in a series of rabbits in which the femur was fractured under anesthesia it was noted by Blunt et al.[5] that healing of the bone was delayed in those treated with cortisone (25 mg. daily). Ragan et al.[1] noted that biopsy wounds and decubitus ulcers failed to heal normally in three arthritic patients who were under treatment with cortisone. Also Stinchfield[6] in experimental animals and in patients used cortisone in conjunction with oxidized cellulose after arthroplasties on the hip and believed that these measures lessened the formation of new bone and of scar tissue around the joint and that the convalescence was shorter and the ultimate results were better than was obtained in similar arthroplasties which were not so treated. Apparently the wounds in Stinchfield's animals and patients healed satisfactorily but, in his address, he mentioned some difficulty in healing because subcutaneous hematoma and cysts were encountered.

Before any of these reports were published, or at least brought to our attention, we had used cortisone postoperatively in a few patients and had not noted that it interfered with the healing of the wounds. Furthermore, in the animal experiments and in other reports in the literature the doses of cortisone were larger than those usually administered to patients.

Also in some experiments on the effect of cortisone on fracture healing of rats, Key, Odell and Taylor[7] found that the fractures in the controls and in the treated animals healed at about the same rate and that on microscopic examination of the sections from the two series of humeri, one group could not be distinguished from the other.

Experiences with cortisone in a series of thirty orthopedic patients are being reported.

One of the early patients was a woman suffering from advanced rheumatoid arthritis which was in the active stage but in whom the symptoms had lessened while in the hospital under treatment for rheumatoid arthritis. This patient had severe deformities of both feet with bunions, hammer toes, plantar callosities and corns on the toes. Under general anesthesia both feet were operated upon: the bunions were corrected by Keller operations, three prominent metatarsal heads were resected, several hammer toes were corrected and bone was removed from areas where it was causing corns. The treatment with cortisone (100 mg. daily) was not interrupted by the operation and was continued for some time

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Read at the St. Louis Rheumatism Society, March 5, 1951.

afterward. Not only did all of the wounds in this patient heal by primary intention but it was our opinion that the convalescence was unusually smooth and that the feet were less swollen and the patient suffered less pain and was able to walk again sooner than is usual after such operations.

In three other patients, bilateral bunion operations combined with resection of prominent metatarsal heads and hammer toe operations were done and the patients were treated postoperatively with cortisone. In two of these patients who were suffering from rheumatoid arthritis, the cortisone seemed to be of definite benefit, but in the other patient who did not have rheumatoid arthritis the result was equivocal and we could not be sure that she had less pain than she would have had if no cortisone had been given. All wounds healed by primary intention.

In three patients with advanced rheumatoid arthritis and severe flexion contractions of both knees the posterior capsules of the knees were cut across and the hamstring tendons were lengthened. After the operations the extremities were immobilized in plaster casts with the knees as nearly straight as in our judgment could be done with safety. Some days later when the blood vessels and nerves had become adjusted, further correction was obtained either by wedging the plasters or by manipulation under an anesthetic followed by the application of new plasters.

In another rheumatoid arthritic patient with severe flexion contraction of one elbow, the head of the radius was resected and the anterior capsule of the joint was divided, and cortisone was administered postoperatively.

In all of these arthritic patients who were operated upon for flexion deformities, and who received 100 mg. of cortisone daily after the operation, the postoperative course seemed to have been unusually smooth and the patients appeared to suffer less pain than is the rule in patients who have been subjected to similar procedures and who did not receive cortisone. However, the end results were about what one would expect in similar patients who did not receive cortisone.

In three nonarthritic patients given cortisone after operations on the hand and wrist, the results were less impressive. In the first of these the distal end of the ulna was resected, the anterior capsule of the wrist was divided and capsulotomies were done upon the four inner metacarpophalangeal joints in an effort to improve the function in a hand and wrist which were stiff and deformed following a Colles' fracture. In this patient the end result was unusually good but it is not believed that the cortisone had much if any effect because it was stopped two days after the operation as it was thought that it was contributing to the postoperative nausea and vomiting which were unusually severe.

In another patient, a neurolysis of the median nerve and tenolysis of the flexor tendons at the wrist were performed in an effort to lesson the disability which followed a severe compound fracture of the distal portions of both bones of the forearm. In this patient the cortisone appeared to have little effect in preventing adhesions of the tendons because two months after the operation they seemed to be as adherent as they had been before the tenolysis and there was little early improvement in the function of the hand. However, six months later she had obtained good function in the hand so it is quite possible that the cortisone was of some benefit.

The third patient was a young woman with severe fractures of all the metacarpals with gross displacement and a large amount of swelling on whom an open reduction was performed about four weeks after the injury. She was given cortisone postoperatively and this was continued during her hospital stay of one week. She seemed much more comfortable than is usual in such cases and the swelling in the hand was less than was expected.

In one patient with severe degenerative arthritis of the knee, the patella was excised and the joint was debrided after the technic of Magnuson. This included removal of two loose bodies, excision of thickened synovia and of both semilunar cartilages, excision of degenerating articular cartilage and removal of marginal osteophytes. Cortisone (100 mg.) was placed in the knee after the operation and was also administered by mouth postoperatively. This patient had a relatively smooth convalescence and less pain and swelling than was expected, but failed to obtain satisfactory power in extension. Consequently, he was operated upon again about four months later and the quadriceps tendon was found to be adherent to the anterior surface of the femur. This was freed and cortisone was used as before and again the convalescence was unusually smooth and free from pain and the result has been satisfactory.

In an old lady whose knee was quite stiff after patellectomy there was considerable improvement in function following manipulation, active exercise and a course of cortisone by mouth.

The drug also seemed to be of considerable benefit in two cases of fibrous ankylosis of the knee which developed with the knee in extension after synovectomy for villous synovitis. These patients were placed on cortisone by mouth, then the knees were manipulated forcibly under general anesthesia, thus breaking up the adhesions and obtaining flexion to about 80 degrees and the cortisone was continued for about a week after the manipulation. In each instance the postmanipulative convalescence was unusually smooth and there was relatively little swelling or pain and more than 90 degrees of movement was retained. We believe that cortisone was of definite benefit in these cases.

Cortisone has been used in only one cup arthroplasty of the hip. In this case a previous ar-

throplasty done two years before was unsatisfactory and this was revised. At the time of surgery cortisone was placed in the arthroplasty site and oxidized cellulose placed about raw bone surfaces. This patient was not placed on cortisone postoperatively. His course after operation, in the hospital and after ambulation, has been no different from those cases done without placing the drug in the arthroplasty wound.

Recently cortisone has been used postoperatively in an unusual case of a completely dislocated elbow of three months duration. This patient did not seek immediate medical care. Open reduction was performed successfully. The drug has seemed to be beneficial although the patient is still in the hospital and still in plaster.

In these patients the usual dose of cortisone was 100 mg. daily and usually it was not started until the day after the operation and was continued for from one to three weeks. In none of them was there interference with wound healing but, ordinarily, in such patients the parts are immobilized and the sutures are not removed until from ten to fourteen days after the operation. Consequently there is little tendency for the wound margins to separate unless sepsis intervenes and no wound infections occurred in these cases.

A rather frequent and painful and disabling condition which may be troublesome, difficult and discouraging to treat is adhesive capsulitis or chronic periarthritis of the shoulder (Duplay's disease or frozen shoulder). In treating this condition we have had more success by admitting the patient to the hospital and manipulating the shoulder under general anesthesia and then fixing the arm in a position of abduction and external rotation for a few days until the acute symptoms have subsided. Then the arm is gradually brought down to the side and exercises are continued in an effort to maintain the motion which has been gained by the manipulation.

During the manipulation periarticular adhesions and, probably in many cases the capsule of the joint, are torn and subsequently the patient suffers severe pain for a few days and often requires opiates in large doses for relief of pain while the arm is tied up to the head of the bed.

We have treated six such patients with cortisone, giving 300 mg. upon the day of the manipulation, 200 mg. on the next day and 100 mg. daily thereafter for from one to three weeks. While the cortisone was being given, these patients were more comfortable and required less sedation than is usual in such patients who are not receiving cortisone. However, when the cortisone was discontinued the pain and disability returned and it is our impression that the period of pain and disability was more prolonged and the end result less satisfactory in the cortisone treated patients. In fact, two of these patients had to be readmitted to the hospital on account of severe pain after the cortisone was stopped.

We have used cortisone in four cases of ankylosing arthritis of the spine in order to obtain temporary relief and some lessening of deformities and this was achieved and lasted for a few weeks after the drug was discontinued. We neither expected nor obtained permanent relief.

In two other cases we have given short courses of cortisone in an effort to differentiate an atypical disk lesion in the lumbosacral region from an early case of ankylosing arthritis of the spine. One of these patients failed to improve and the other improved a little while on cortisone and hence both were diagnosed disk lesions and their subsequent course has shown that this was correct.

SUMMARY

In our experience cortisone in therapeutic doses has not interfered with the healing of wounds when it was administered after operations upon the extremities. In patients with rheumatoid arthritis it appears to lessen postoperative pain and swelling and to shorten the convalescence. Consequently we do not believe that the drug should be discontinued in an arthritic patient who is to be operated upon. Whether or not the drug should be given postoperatively to such patients who are not being treated with cortisone is still a moot question.

In nonarthritic patients who have had operations upon joints or tendons we have found the drug of value in that the postoperative swelling and pain seem to be less than we have noted after similar operations in patients who were not treated with cortisone. We are not sure that it has influenced the end result.

In frozen shoulders it may lessen pain after manipulation under anesthesia, but when the cortisone is discontinued the pain may return.

In ankylosing arthritis of the spine cortisone may be of considerable value in obtaining temporary relief of pain and permitting partial correction of deformities, but it is not curative. Because of its temporary benefit in this condition it may be useful in differentiating an early case of ankylosing arthritis of the spine from a disk lesion in the lumbosacral area.

4952 Maryland Avenue.

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AUTONOMIC STUDIES IN THE DIAGNOSIS OF PERIPHERAL NERVE LESIONS

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PERIPHERAL NERVE injuries are frequent complications of battle wounds of the extremities.[1] Such



Fig. 1. Area of anhidrosis in ulnar nerve lesion.

injuries are often associated with bony fractures and extensive soft tissue damage. These associated injuries diminish the reliability of motor and sensory studies in the detection of any existent nerve lesions.

Diagnostic methods which aid in circumventing these difficulties, and are objective, are of obvious value. This study emphasizes the value of the determination of peripheral autonomic functions in the diagnosis of peripheral nerve lesions.

DISCUSSION

A typical peripheral nerve has motor, sensory and autonomic components. Trauma to the nerve may result in a loss or perversion of function of any, or all, components.

Autonomic alterations result from psysiologic or anatomic damage to the unmyelinated, or so-called "C" fibers, of the peripheral nerve trunks. These fibers are distributed to sweat glands and vascular elements of the periphery over established sympathetic dermatomes.[2] These sympathetic nerves convey afferent impulses from cells arising in the intermediolateral cell columns of the thoracic and lumbar cord. The peripheral sympathetic fibers take origin in the sympathetic chain and join the primary rami via the gray rami communicantes.

Evaluation of peripheral autonomic function may be reflected by eliciting the sweating reflex. The usual stimulus is heat. The application of external heat results in a hypothalamic thermoregulatory response. Impulses discharged via the sympathetic outflow stimulates the cutaneous sweat glands. Alternate methods of stimulating sweating, e. g., the use of pilocarpine, mecholyl or furmethide, are less satisfactory. Areas of sweating are outlined graphically by colormetric methods. Cobalt blue papers applied to the skin and subsequently contacted by sweat droplets turn pink. Sweat beads contacting the gray powder of sodium chinizarin 2-6 disulfonate develop a deep reddish purple color. The brick red color of powdered 1-4 dihydroxyanthraquinone 2-6 disulfonic acid transforms to a deep purple color when moist. These studies have utilized the



Fig. 2. Area of anhidrosis in median nerve lesion.

simple starch iodine reaction. The skin, after preliminary preparation by shaving and removal of organic surface substances, is painted with a solution of 1 per cent iodine in 95 per cent alcohol. This is allowed to dry. The area then is dusted with fine starch powder. The region is exposed to heat derived from an arc of electric bulbs. The resulting sweat droplets offer a media for the chemical reaction between the starch and iodine. This reaction produces the familiar dark

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The opinions or assertions contained herein are the private ones of the writer and not to be construed as official or reflecting the views of the Navy Department or the Naval service at large.

blue color. Anhidrodic areas retain their light powdered surface. Sympathetic integrity is also reflected in comparative body surface temperatures. Skin temperature is altered as a result of vasodilation or vasoconstriction. These changes may result from alterations of normal sympathetic control. Complete sympathetic denervation results in vasodilatation with resultant rise in surface temperature. Irritative lesions result in a vasospasm with the resulting decrease in surface temperature. Since skin temperature is also a result of environmental conditions, comparative studies must be carried out in similar room temperature and humidity. Skin surfaces should be exposed to these atmospheric conditions for fully an hour prior to study. The determinations are then easily completed by direct reading from a standard thermocouple. Skin temperatures are measured in comparable areas of sympathetic dermatomes. The dermatomes selected are those of the spinal levels which correspond to the principal contributors of the somatic nerve being studied. These valves are compared with similar determinations of the contralateral, uninvolved, extremity.



Fig. 3. Area of anhidrosis in radial nerve lesion.

RESULTS

The areas of anhidrosis accompanying various nerve lesions are quite characteristic.

As in the algesic sensory overlap of the peripheral sensory components, there is an obvious autonomic overlap. Hence, areas of anhidrosis



Fig. 4. Area of anhidrosis in femoral nerve lesion.

are often bounded by an area of hypohidrosis. This demarcates the "autonomous" zone, or area in which there is no overlap of the autonomic dermatomes, and the "intermediate" zone, or area given autonomic innervation by the involved and adjacent nerves. The area of anhidrosis varies with the involved nerve and with the level of involvement in a given nerve. Figures 1 to 6 represent characteristic patterns in various of the more common nerve lesions.

Sweat patterns were determined in forty-two cases of peripheral nerve injuries prior to surgical



Fig. 5. Area of anhidrosis in peroneal nerve lesion.

exploration. The nature of the injuries were variable. The time duration between injury and these studies varied from three weeks to more than six months. Complete nerve transections gave areas



Fig. 6. Area of anhidrosis in sciatic nerve lesion.

of detectable anhidrosis in 91 per cent of the cases studied. This is identical with the incidence of demonstrable areas of sensory loss in this series. Incomplete nerve lesions, i.e., lesions showing no anatomic interruption of the nerve trunk, but with corresponding peripheral motor and sensory loss, displayed areas of anhidrosis in only 63 per cent of the cases. In each case the type of nerve lesion was verified surgically.

Table 1. *Sweat Patterns*

Nerve Lesion	Cases Studied	Areas Anhidrosis	Sensory Loss	Per Cent Anhidrosis
Complete	23	21	21	91
Incomplete	19	12	19	63

Table 2. *Temperature Studies*

Nerve Lesion	Cases Studied	No Temperature Change	0 to 0.5 Degree Increase	0.5 to 1.5 Degree Increase	0 to 0.5 Degree Decrease	0.5 to 1.5 Degree Decrease	Per Cent Change
Complete	15	3	3	9	0	0	75
Incomplete	16	2	0	0	2	12	93

Skin temperature studies in fifteen anatomically complete nerve lesions showed a temperature rise in 75 per cent of the cases. In the remaining 25 per cent there was no demonstrable change. In no instance was there a lowered temperature in the involved area. In sixteen cases of peripheral nerve lesions, without evidence of anatomic interruption of the nerve trunk, there was a demonstrable decrease in skin temperature in 93 per cent of the cases. The remaining cases showed no temperature change. In no instance was there a skin temperature elevation in the involved area. Tables 1 and 2 summarize these findings.

SUMMARY

1. This report lends emphasis to the value of the study of peripheral sweat patterns and skin temperature in the diagnosis of peripheral nerve lesions. These are of special value in cases in which associated injury alters the reliability of motor and sensory studies.

2. Statistically, these studies offer a means of differentiation between neurotmesis and axonotmesis.

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TREATMENT OF THE CARDIAC COMPLICATIONS OF HYPERTENSION

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CONGESTIVE FAILURE

In hypertensive heart disease, the left ventricle fails to empty completely as congestive failure develops a reduction of cardiac output relative to the inflow load. This eventuates in the usual sequence of events, beginning with exertional dyspnea followed by orthropnea and paroxysmal nocturnal dyspnea. The greater part of this load is in the cardiac diastolic blood volume, particularly in the left ventricle in hypertensive heart failure. The reduction of venous load by the upright position or by venous trapping through tourniquets or blood pressure cuffs often relieves the attack dramatically. Naturally, the indication is for oxygen if available, adequate narcotic relief and prompt and effective digitalization. The beneficial effect of intravenous aminophylline is probably more from its established action on reflex pulmonary vaso-constriction and broncho-constriction than from any effect on the heart muscle itself.

Aminophylline is also effective in the management of Cheyne-Stokes respiration due to the involvement of the respiratory center in hypertensive heart failure, as well as for paroxysmal nocturnal dyspnea or nocturnal coughing spells due to fluid gathering in the alveoli from chronic passive congestion.

Sodium Restriction.—In the management of

Read before the St. Louis County Medical Society, November 14, 1951.

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hypertensive heart failure careful salt restriction is of paramount importance. Obstinate edema may be controlled in many cases in which the usual program of rest, sedation, digitalis and diuretics have proven inadequate. Lowered plasma protein also can be a factor in perpetuating edema and must be kept in mind. Sodium restriction also permits greater fluid allowance, thereby preventing thirst and dehydration. The monotonous flat taste of such a diet can be helped somewhat by salt substitutes, the most useful of which is Diasal. To facilitate the rapid depletion of edema the mercurials are the most powerful diuretics available. An acidifying salt such as ammonium chloride is a useful supplement to this action but should be avoided where there is grossly impaired kidney function because of the danger of producing acidosis.

In attempting to restore the electrolyte and water equilibrium to normal, one must bear in mind the relationship between concentration of sodium and potassium, as the treatment of edema may lead to deficiency of either. The clinical differentiation between the two may be difficult and must sometimes be solved by the flame photometer method. Reduction of extracellular sodium below physiological levels can produce uremia, electrolyte shock and death. If symptoms of salt depletion are recognized early, the process can be reversed by the infusion of hypertonic sodium chloride solution but, if they persist for too long a period, irreversible changes may take place.

Radioactive Iodine in the Treatment of Heart Failure Resistant to Ordinary Clinical Measures.—The physiologic relationship between the demands of metabolism and cardiac output suggested the idea that artificial hypothyroidism might result in clinical improvement. Blumgart[1] in 1933 suggested total ablation of the normal thyroid for the relief of intractible heart disease. By inducing hypothyroidism with I 131, he reports[2] that one-third of thirty-seven patients showed remarkable improvement and another third definite and significant improvement. Following an initial phase of thyroiditis lasting from one to ten days in two-thirds of the group, signs of hypometabolism became manifest from six weeks to six months later. Where myxoedema did develop, small doses of thyroid were given. It is felt that the patients suited for this treatment are those whose disease is relatively stationary or only slightly progressive and yet not responsive to the usual program of rest, low sodium intake, mercurial diuretics, xanthines and digitalis, and whose initial basal metabolism is above minus ten.

Cation Exchange Resins.—Recently a new approach for the treatment of edema, and also applicable for maintaining a low sodium program with a more palatable diet in hypertensive disease has been used. Cation exchange resins bind the intestinal sodium and thereby reduce the amount of the ion available for absorption through the intestinal tract. These ion exchangers are relatively insoluble substances which have the unique property of releasing one ion and replacing it with another. The type of resin being used is a fine powder containing 20 per cent in the potassium and 80 per cent in the hydrogen cycle. This acid resin acts in the intestinal tract by taking up sodium and releasing hydrogen. We are using Natrinal, 1 tablespoonful of the bulk powder four times daily, which represents an effective amount. Since 20 per cent is in the potassium cycle, this preparation should not disturb potassium balance inasmuch as it releases approximately as much potassium as it removes. Where salt restriction is indicated this will allow a far more normal diet, as the only provision necessary is to prohibit additional salt at the table, with a minimized amount in cooking. This plan allows for 1 to 3 gm. of salt intake daily.

Anticoagulants in the Treatment of Congestive Heart Failure.—It is felt that severe congestive heart failure cases, in which enforced rest and heavy sedation is imperative, should have the benefit of anticoagulant treatment, particularly where there is an initial prolonged prothrombin level. This plan is justified by the fact that pulmonary thrombosis and infarction is rather frequently found postmortem in congestive heart failure. This probably explains the low grade temperature and the increased sedimentation rate so often observed in the course of congestive heart failure.

In bouts of acute decompensation with hypertensive heart disease we favor getting the patient out of bed as soon as possible, preferably into a rocking chair. The enhancement of venous return from the legs incidental to the muscular contraction entailed in rocking appears to have a beneficial physiologic influence. The general enhancement of physical comfort and mental contentment associated with sitting in a rocking chair was recognized by an older generation and should not be lost sight of.

THE TREATMENT OF CORONARY ARTERY DISEASE

From an etiologic standpoint the incidence of coronary disease appears to be influenced by heredity, hypertension and diabetes. There is increasing evidence that overnutrition, sedentary habits of living and overindulgence in smoking contribute to coronary changes in otherwise vulnerable subjects. These etiologic factors may be subdivided into the predisposing, the precipitating and certain perpetuating influences.

Predisposing factors include heredity, hypertension, diabetes and overnourishment; that is physically "unearned" food intake, probably fats in particular. The ultimate role of ingested fats in the production of cholesterol in man has not been fully agreed upon, although the high cholesterol levels found in the majority of middle aged coronary subjects is of conceded significance.

Precipitating factors that may bring about acute coronary episodes include mental, physical or emotional stress and strain, anesthesia and shock, debilitating illness and severe hemorrhage.

Among the perpetuating factors that appear to play an important role in the evolution of human coronary disease are faulty habits of eating, excessive smoking and certain metabolic disorders such as diabetes and hypothyroidism. Poor emotional control is often encountered since anginal subjects are more frequently than not possessed of a hyper-reacting temperament; are characteristically restless often without natural or cultivated tranquillity and poise. They are frequently lacking in the ability to relax or let up on sustained tension in not only occupational but even recreational pursuits.

The various phases of coronary disease to be discussed are angina pectoris, acute coronary insufficiency and coronary occlusion with or without myocardial infarction.

ANGINA PECTORIS

Effective control of angina pectoris depends more upon reduction of demand on attenuated coronary supply than on available measures for increasing coronary flow by drug therapy. An altered tempo of living with thoughtful cushioning of even essential acts and efforts, by which the studied and the deliberate replaces the hurried and the impulsive, is the sine qua non of successful management. Nitroglycerin is the sovereign remedy for the attack and should be used to anticipate as well as relieve angina known by the subject to follow certain unavoidable acts. A drink of whisky or brandy is the next best vasodilator, with oxygen as the optimum physiologic measure, one that may ward off an otherwise protracted attack. A small tank and mask should be among the emergency equipment of every severe anginal subject. In the attempt to prevent attacks, one must map out a campaign and give explicit instructions as to every detail of everyday living, be it in the realm of the physical, the mental or the emotional. Metabolic abnormalities including overweight must be controlled, infections eliminated, gastrointestinal and gallbladder disturbances properly treated and smoking attenuated if not tabooed. A ten day trial of aminophylline is probably justified but few uncomplicated anginas are responsive. My experience has been the same with Khellin derivatives. Mild sedation is usually indicated and helpful.

Slow, gradual coronary closure may develop to considerable extent and yet remain relatively asymptomatic, i.e., without anginal pain. This gradual occlusion gives rise to an area of myocardial fibrosis without an acute infarction ever developing. In most cases such slow closure is punctuated by recurrent occult occlusions and a gradual lowering of myocardial reserve with increasing effort dyspnea and eventual congestive failure. Episodes of arrythmia may mark the progress of such a slowly advancing occlusive process.

ACUTE CORONARY INSUFFICIENCY: (Protracted angina):

Papaverine in doses of 1 grain (in 2 cc. ampules) given slowly intravenously often stops the protracted attack. When not relieved in five minutes, it should be followed by Demerol or morphine, intravenously if necessary, should the seizure be severe. I feel that the more promptly an attack is relieved, the more one can hope to avert irreversible circulatory changes with consequent infarction, or possibly limit the extent in the event that infarction is inevitable. These protracted attacks of angina constitute so-called "acute coronary insufficiency." Should they be difficult to relieve or come on in recurrent seizures, danger of impending infarction justifies beginning protective anticoagulant therapy, by 200 mg. of Depo-Heparin to be repeated in eight hours. Dicumarol therapy is begun at the same time after the initial prothrombin level has been obtained. This is the same program that one would initiate for a severe attack of frank coronary occlusion with the probability of ensuring infarction. When available, oxygen is always indicated.

MYOCARDIAL INFARCTION

The indication for routine anticoagulant therapy in every case of myocardial infarction is questionable. Its use in a more selective way has been carried out on our hospital service for the last year. Experience is that the probability of a fatal outcome, or of a thrombo-embolic complication is quite low in a so-called good risk patient who does not present ominous signs or symptoms in the early stages of the attack. It also was found that a considerable percentage of the sudden deaths that did occur were in the first forty-eight hours before Dicumarol could possibly have become effective. Furthermore, when one considers the number of deaths from complications that could not have been influenced by anticoagulants, such as prolonged shock, ventricular fibrillation, myocardial rupture and congestive heart failure, the actual preventable mortality may be considerably lower than gross statistics would indicate. Russek, Zohman and White[3] reported that the actual mortality of uncomplicated infarction cases treated by conservative methods in their first attack was only 2.4 per cent, while, theoretically, preventable mortality with anticoagulants would not have been even 1 per cent more. These observers contended that Dicumarol should be reserved for patients who manifest serious prognostic signs—in other words, "poor-risk" patients, in which their mortality rate was 44½ per cent, and the incidence of thrombo-embolic complications was 7.7 per cent. The prognostic criteria for "poor-risk" cases, on which

we base indications for anticoagulant therapy include a previous attack of infarction; severe, intractable, or tendency to recurrent anginal pains, and in severe or persistent shock. Congestive heart failure, gallop rhythm, auricular fibrillation or ventricular tachycardia also justify anticoagulant therapy in our opinion. When extra-systoles occur frequently during the post-infarction period, we use Quinidine sulphate, 3 grains every four hours.

Angina decubitus, i.e., angina occurring during rest, may be brought about by the load of nocturnal reabsorption of edema fluid, in insidious passive congestion due to early myocardial failure. Such attacks are sometimes relieved by mercurial diuretics which should be given intramuscularly or subcutaneously and not intravenously. If not effective after one or two nights and the threat of approaching or developing infarction still exists, anticoagulant therapy would be in order until one is rather certain that infarction is not taking place or is not severe in degree, with none of the complications or ominous signs already described that would justify continued anticoagulant measures.

Another trend which appears to be justifiable in the management of myocardial infarction is shortening the time of bed rest insisted upon. In favorably responding cases one has the patient remain in bed, except for bowel movements on a chair commode for a two or three week period, and then allow them to sit up for an hour in a chair, and a half hour longer each day. They are permitted to walk about the room the week following. The available evidence suggests that while there is every advantage in prolonged restriction of activity, but little is to be gained by prolonged bed rest after the danger of myocardial rupture has passed. This rare complication usually occurs during the first fortnight and is uncommon thereafter. Furthermore, it has been shown that histologically much of the necrotic muscle has been replaced by connective tissue by the end of the first fortnight, after which time healing continues, though fibrosis is not complete until from five to eight weeks after the onset of the infarction. Another cause of sudden death in the first week or two is ventricular fibrillation, which is prone to occur even earlier than myocardial rupture.

There has been no convincing experimental evidence in induced myocardial infarction in dogs that ventricular aneurysm is encouraged by early activity. Evidence concerning the eventual restoration of functional capacity in relation to the period of bed rest is not statistically available. Blumgart has suggested that the stimulation to collateral circulation may probably be influenced by the presence of insufficient blood supply and the consequent tissue demand for the same.

Among the disadvantages of recumbency are reduced circulation in the pulmonary bases, increasing tendency to constipation and greater possibility of peripheral venous thrombosis and therefore potential pulmonary embolism. Furthermore, abnormal nitrogen and calcium metabolism, together with the psychic trauma and enhanced anxiety incidental to a protracted stay in bed, are not to be discounted as an important factor in ultimate recovery and return to functional capacity of the patient. After all, there are two principal objectives in the management of myocardial infarction. The first is saving the patient's life, and the second is an effort to prepare him for further living. This objective all too frequently has been neglected in the past.

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CORTISONE AND ACTH USED TO TREAT SKIN DISEASES

The successful use of cortisone and ACTH to relieve the symptoms of thirteen various skin inflammations and diseases was reported in the January 5 *Journal of the American Medical Association.*

The article stressed, however, that the hormone drugs did not cure the afflictions, and should not be used promiscuously, without knowledge of their physiologic effects and dosage, and of the influence of infection on those receiving such treatment.

The drugs, according to the report, appeared to buffer or to shield the target tissues from the provoking agent and, because of this, suppressed many of the serious disabling symptoms of the diseases. They also aided in reducing the itching, which permitted more rapid healing of the lesions.

In addition, many of those persons treated with cortisone and ACTH showed mental stimulation and mental buoyancy, were much more active and had increased appetites.

Some of the patients, however, were unable to sleep well, appeared anxious and agitated, and experienced slight and transient changes in their mental stability. Cortisone also tended to suppress the symptoms and surface signs of infectious diseases, which prevented the recognition of unexpected infections. Some patients, the report stated, did not obtain any relief from the drugs.

Recurrences of the symptoms of the diseases and inflammations were noted in many cases shortly after administration of the drugs ceased, according to the four Rochester, Minn. dermatologists who made the report.

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Postgraduate Review

ACTH AND CORTISONE IN RHEUMATOID ARTHRITIS

A FOLLOW-UP STUDY OF THE CLINICAL EFFECT IN THIRTY-FOUR CASES

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EARLY RHEUMATOID arthritis is a reversible condition[1] and a spontaneous remission does occur in about one third of all cases. Several remedies have been claimed to induce remissions, the most convincing being gold salts. Reversibility also can be produced by febrile reactions (to foreign protein), starvation, anesthesia, surgery, hepatitis with juandice and pregnancy. This may be due to the alarm reaction which these forms of stress produce in the organism (Selye[2]).

Hench[3] suggested that an adrenal hormone might be the "antirheumatic substance responsible for the improvement seen during pregnancy, hepatitis, general anesthesia and surgical operation," and in 1948 he introduced to clinical medicine 17-hydroxy-11-dehydro-corticosterone (compound E, later named cortisone), a steriod from the adrenal cortex. His first series of fourteen patients[3] with severe or moderately severe rheumatoid arthritis all showed marked improvement after a few days or weeks of treatment with this compound in average daily doses of 100 mg., but a prompt relapse followed in most cases upon discontinuation of the drug. This occurred in eight of nine cases within from two to four days. Two of the patients also received pituitary adrenocorticotropic hormone, ACTH, with the same striking result, this being due to the stimulatory effect of ACTH on the adrenal cortex with following secretion of compound E, F and related steroids.

Edström in 1942 reported beneficial effect on rheumatoid arthritis from implantations of the anterior lobe of the pituitary gland; but only one woman who had additional endocrine disturbance was treated and this form of treatment was not repeated on a large scale until 1949.[4]

Hench's observations have been verified by numerous investigators and clinicians (Boland[5,6] Rosenberg[7] Freyberg[8] and many others).

Since May 1950 we have given ACTH or cortisone to thirty-nine patients, sixty-one "courses" in all. The average duration of a course was ten days. Eleven patients have had cortisone for from one to six months.*

From the Rheumatism Clinic, Kansas City Municipal Hospital No. 1, sponsored by the Kansas City Chapter of the Arthritis and Rheumatism Foundation.
Research Fellow (F.F.) and Director (C.S.G.) Rheumatism Clinic.
*ACTH "Armour" and "Cortisone" acetate "Merck" were used. The drugs were supplied by the Kansas City Chapter of the Arthritis and Rheumatism Foundation.

ACTH and cortisone were tried in two cases of osteo-arthritis, in one case of shoulder-hand syndrome and in one case of degenerative joint disease due to hemophilia. The effect in these cases was nil or not remarkable and they are not included in the statistics.

Table 1. *Classification of 34 cases of rheumatoid arthritis according to severity*

	No. of Cases	
Stage I (mild)	5	
Stage II (moderately severe)	7	
Stage III (severe)	16	65 per cent
Stage IV (very severe)	6	

One patient with keratosis blenorrhagica has received 1,000 mg. of ACTH and 35,000 mg. of cortisone during the last ten months. This case will be reported separately.

Thirty-four patients had typical rheumatoid arthritis. The cases were selected according to what was believed to be the indication for this form of therapy: mainly severe progressive cases in which other treatments had failed.

Sex.—Of the thirty-four patients with rheumatoid arthritis there were twenty-two females and twelve males. This is in accordance with the usual sex incidence (two to three times as many females as males become afflicted with rheumatoid arthritis) considering that two of the patients had rheumatoid spondylitis, which is predominately a masculine disease (nine males to one female).

Age.—Two patients in this group were less than 20 years of age, ten between 20 and 40, fifteen between 40 and 60, and seven above the age of 60. The age incidence for the onset of rheumatoid arthritis has its maximum between the twentieth and fourtieth years. The relatively large group of older patients in our series is explainable by the fact that only few early cases were treated with ACTH and cortisone.

Duration.—Fifteen of the patients had had rheumatoid arthritis for fifteen years or more, fifteen from two to ten years, one for one year and three for less than six months.

Severity.—All the cases were evaluated according to the criteria for classification of the stage of progression recommended by the American Rheumatism Association.[9]

From table 1 it will be seen that 22 of the thirty-four cases (65 per cent) were classified as severe and very severe.

Functional Capacity.—The patients were also grouped according to the American Rheumatism Association's classification of functional impairment.[9]

The two modes of classification do not necessarily give indentical figures, as the functional capacity to a great extent on factors which do not play a part in the classification of stage; i.e., type and number of joints involved, patient's occupation, intelligence, energy and will power.

From table 2 it will appear that all the patients except two were incapacitated, twenty-three (68 per cent) to a degree that only permitted little or no functional capacity, while eleven (32 per cent) were able to conduct usual daily activities and work, although most of them were handicapped some.

Table 2. *Classification of 34 cases according to functional capacity*

	No. of Cases	
Class I (complete)	2	32 per cent
Class II (adequate)	9	
Class III (limited)	16	68 per cent
Class IV (incapacitated)	7	

Etiologic or Precipitating Factors.—The etiology of rheumatoid arthritis remains unknown. It was impossible in this series in most cases to find a precipitating factor. All patients were asked with special reference to living conditions, family disposition, possible rheumatic fever, focal infections, allergic diathesis, endocrine disorders (diabetes, disturbance in thyroid or sex gland function) and mental instability.

Most patients lived under rather poor conditions, but their housing and nutritional standards should have been sufficient to maintain health in an average normal individual. Many gave a history of "rheumatism" or "arthritis" in the family, but whether this was true rheumatoid arthritis is questionable. There was diabetes mellitus in one case and that patient proved to have latent diabetes, which occasionally became manifest on as little as 50 mg. of cortisone daily. Two gave histories of previous rheumatic fever, three histories of focal infection (two with pyorrhea, one with old Neisserian infection). Two patients had had subtotal thyroidectomy and two bilateral oophorectomy, but the past history seemed noncontributory or completely negative in most cases. Fourteen of the patients had had one or more pregnancies. Only four had rheumatoid arthritis at the time of a pregnancy; one of these experienced improvement of her joint symptoms during the pregnancy.

Associated and Accompanying Diseases.—There were besides fibrositis, tendinitis, subcutaneous nodules and secondary anemia—all frequent features of rheumatoid arthritis—two cases of rheumatoid spondylitis with peripheral joint involvement (spondylitis ankylopoetica), and one old case of coxa plana epiphysiolytica. One had a Felty syndrome (rheumatoid arthritis and hypersplenism), one rheumatic heart disease (mitral stenosis), one sinus tachycardia, one gold rash, one recurrent urticaria and one eczema of the hands. Eye diseases were represented by two cases of iridocyclitis, one kerato-conjunctivitis, one retinitis circinata, and one malignant exophthalmos (after thyroidectomy). Three suffered from chronic bronchitis and emphysema of the lungs, two were obese, one had cancer of the cervix uteri (radium treated), and one a moderately enlarged prostate gland.

One patient developed a Guillan-Barré syndrome, one a schizoid type of psychosis, and one an infectious hepatitis during the treatment. The hepatitis was probably due to an inoculation with an infected needle. Otherwise it seems merely coincidence that these diseases appeared during the ACTH or cortisone therapy. Psychosis is not an infrequent complication of this treatment (1 to 2 per cent) but it is usually of manic depressive character and starts during the treatment and not, as in our case, a couple of weeks after the discontinuation.

Previous Treatments.—All the patients were in active or progressive stage of the disease when ACTH or cortisone was started. They were all taking analgesics of different kinds (mostly salicylates or salicylate compounds). Most of the patients had previously tried several other forms of treatment consisting of physical therapy, removal of suspected foci of infection tonsils and teeth), synovectomy, fever and vaccine therapy, sulfa and penicillin, vitamins (high dosage vitamin D), hormones (including desoxycorticosterone with vitamin C and pregnenolone) and several other even less rational measures.

Twenty-one of the thirty-four patients had previously had gold injections, four of whom had only a short course because of the development of toxic manifestations (nausea, skin rashes and leukopenia). The remaining seventeen had had what is considered an adequate course (more than 500 mg). Gold was discontinued in three of these cases because of skin rash, leukopenia and diarrhea respectively. The rest responded poorly to gold and it was thought advisable to try ACTH or cortisone.

Method of Study.—Thirty-four cases of rheumatoid arthritis were treated with fifty-six courses of ACTH or cortisone. Twenty-four patients received ACTH, three (cases 1, 6 and 30) had two courses and one (case 8) three. Cortisone was given to twenty-one patients, three (cases 6, 9 and 32) of whom had two courses, one (case 8) had four, and eleven patients had subsequent courses of ACTH and cortisone. A course of ACTH consisted in an average of 400 mg. (ranging from 120 to 530 mg.) during a ten day period (ranging from three to twelve days). The average dosage of cortisone was 1,000 mg. (ranging from 400 to 2,075 mg.) in ten days (ranging from four to twenty-one days). The average daily dose of ACTH was 40 mg. and of cortisone 100 mg., the beginning dose often being a little higher, the dose toward the end of the course lower. No other medication was given during the initial course except iron and vitamin supplements. The patients were on a general diet without sodium restriction or potassium supplement. Physical therapy was given as indicated.

All the patients were hospitalized during the initial course of hormonal therapy. Joint measurements were done before and after each course of treatment and subjective or objective changes noted daily.

Routine laboratory work on the twenty-eight admitted at the General Hospital consisted of (1) daily determination of weight, blood pressure, urine for sugar and number of circulating eosinophils in the blood; (2) biweekly hemoglobin, red, white and differential counts, erythrocyte sedimentation rate, total serum protein, albumin, globulin with A/G ratio, fasting blood sugar, serum cholesterol, calcium, phosphorus, alkaline phosphatase, blood uric acid, nonprotein nitrogen, serum sodium and potassium, and occasionally 17-ketosteroids and various other tests as indicated in individual cases. Also roentgenograms and electrocardiograms were taken routinely at least once and repeated if any changes were suspected. Many of the patients were photographed before and after treatment.

The response of rheumatoid activity to therapy was evaluated according to the criteria recommended by the American Rheumatism Association.[9] These criteria of response are based on the effect of the following basic symptoms of the disease: systemic signs, sign of joint inflammation, signs of extra-articular activity, impairment of joint mobility, articular deformity, erythrocyte sedimentation rate and roentgenologic signs.

A Grade I response means complete remission, (clinical, laboratory, and roentgenologic) except for irreversible changes (bony ankylosis). Response Grade II is a major improvement and Grade III a minor improvement as evaluated according to all the previously mentioned signs and symptoms. Finally response Grade IV is unimprovement or changes indicative of progression of the disease.

ANTIRHEUMATIC EFFECT OF ACTH AND CORTISONE

We have noticed the same fast relief and striking improvement in almost all our patients' conditions during ACTH or cortisone administration as originally described by Hench.[3]

The improvement was in most cases apparent in a matter of hours to a few days after the first dose was given and maximum effect was usually obtained in from one to two weeks. The typical course in a successful case was as follows:

First, rest pain disappeared, next stiffness, tenderness and pain on motion would decrease and then soft tissue swelling around the joints diminished, contractures, not due to ankylosis, vanished, motion and functional capacity increased and subcutaneous nodules were reduced. The patient's general condition improved, he felt stronger, and "less tired," could walk and used hands and arms better, appetite and weight increased, mental outlook was more optimistic, sometimes to a degree of euphoria, and the patient complained sometimes of a little restlessness, nervousness and sleeplessness.

All transitions were noted from the most striking improvement to no effect at all, but there was good immediate response in most cases and only five complete failures in forty-five courses (see table 7).

Changes in Other Clinical Manifestations.—There was marked effect on accompanying eye and skin disease (except in one case of retinitis circinata) while the other mentioned conditions associated with rheumatoid arthritis in our series were not affected.

There was improvement in two cases of iridocyclitis, one case of kerato-conjunctivitis (tropical application of cortisone) and one case of malignant exophthalmus receiving ACTH. One case of eczema of the hands, which had resisted several kinds of therapy, disappeared promptly during ACTH therapy. A rather severe gold rash in another patient improved. One case of intercurrent uticaria was suppressed temporarily. One patient with an enlarged prostatic gland experienced a decrease in nocturia from five to two times on receiving cortisone.

Changes in Laboratory Manifestations.—ACTH (average 40 mg. daily) and cortisone (average 100 mg. daily) did not significantly change the blood picture except for a slight tendency to increase the number of granulocytes (eosinophils excluded) and decrease the lymphocytes. Serum cholesterol, calcium, phosphorus, alkaline phosphatase, blood uric acid and nonprotein nitrogen were in all cases within normal limits and did not change during therapy.

There was a slight tendency to shift in the serum sodium-potassium proportion, the sodium increasing and potassium decreasing, but the values in no instance exceeded the upper or lower limits of the normal, respectively. The excretion of 17-ketosteroids in twenty-four hours urine samples increased some under ACTH; no significant change was caused by cortisone in the few cases in which they were determined. Occasional hyperglycemia and glycosuria occurred in one case (26) with a family history of diabetes mellitus and mild transitory hyperglycemia was also encountered in another case (34). Cortisone was continued in the first of these without trouble and ACTH and cortisone in small doses were well tolerated in the other.

In no instance did the electrocardiogram or roentgenogram of the bony structures change in the cases in which these examinations were repeated.

Effect on Erythrocytic Sedimentation Rate.—The erythrocytic sedimentation rate is one of the best indicators of the disease activity. It was increased prior to treatment in all thirty-four cases. The determinations were made by Cutler's and Westergren's methods. Biweekly examination revealed the following changes (only a consistent tendency to decrease or increase more than 3 mm. by Cutler's method was considered significant): Ten of the thirty-four cases (30 per cent) became normal (below 10 mm. Cutler's technic), eleven decreased, but not to normal; eleven showed no significant change and two increased.

There was a good accordance in the results obtained with Cutler's and Westergren's technics,

but Westergren's is recommended because it is the most sensitive.

There was in general a tendency for the sedimentation rate to increase shortly after discontinuation of the drugs.

Effect on the Serum Protein.—Total serum protein, albumin, globulin, and A/G ratio were taken biweekly on twenty-seven patients. The total protein was considered within normal limits (6 to 8 gm. per cent) in twenty-three cases, and below normal in four. There was a significant increase in total protein of 1 gm. per cent or more in three cases already within normal limits before therapy. Total protein decreased in one case (with intercurrent hepatitis); the remaining twenty-three cases were unchanged. The A/G ratio was fairly normal (above 1.5) from the beginning in seventeen of the twenty-seven cases, low in ten. Two already within normal range and four of low value increased 0.2 or more. Four of normal value decreased below normal. The rest were unchanged.

There was no consistent relation between the recorded changes in the total serum protein and A/G ratio on the side and the sedimentation rate on the other. Such a relation could have been expected (globulin tends to increase the sedimentation rate, albumin decreases it), but serum fibrinogen (increases the sedimentation rate) and other factors of importance for the sedimentation time of the erythrocytes were not determined.

The effect of ACTH and cortisone on serum proteins and sedimentation rate seemed essentially the same, but the figures are too small for statistical evaluation.

Effect on Eosinophils.—The number of circulating eosinophils per cubic millimeter was counted before and daily during the treatment of thirty-three patients receiving ACTH or cortisone. The eosinophil count varies in different persons and fluctuates even in the same individual under different circumstances, but the normal values probably range between 25 and 300 per cubic millimeter.[10] Prior to treatment, twenty-seven of the thirty-three patients revealed counts within these limits; one patient had a spontaneous low count and a count above this range was found in five cases, one of which had a gold rash (high values supposedly indicate adrenal insufficiency when allergy can be excluded).

The four hour 25 mg. ACTH test of Thorn was not carried out routinely; the routine being that the pretreatment level compared with the count after twenty-four hours treatment (of 10 to 15 mg. ACTH times 4 or 100 to 200 mg. cortisone respectively) was used as a guide in determining the response.

ACTH caused a decrease in eosinophils of 50 per cent or more in thirteen of twenty-nine patients (45 per cent); eleven of the remaining patients had a significant fall after ACTH, but less than 50 per cent. Five patients did not show response in eosinophils after ACTH stimulation; one of these showed increasing values. There was a fairly good, but not absolute, correlation between fall in eosinophils and clinical effect. One of the five with no response in eosinophils had a major improvement (Grade II), the other four showed only clinical improvement (Grade III). All of the three complete failures to ACTH (Grade IV), on the other hand, showed a decrease in the number of circulating eosinophils, one of which was more than 50 per cent. The correlation in the rest of the cases was good.

Table 3. *Untoward effects during 24 courses of ACTH*

	No. of Cases
Hypertension (150/100)	2 (cases 4 and 7)
Edema (fluid retention)	1 (case 10)
Acne and rash	1 (case 18)
Euphoria	2 (cases 6 and 10)
Psychosis	1 (case 17)

Cortisone also had a tendency to decrease the number of circulating eosinophils. The fall was more than 50 per cent in four of seventeen cases (24 per cent), less than 50 per cent in eight cases and not significant in five. A fall in eosinophils does not seem essential for the clinical response to cortisone.

A Thorn test was performed a week after withdrawal of cortisone in two cases receiving this hormone in daily doses of from 25 to 75 mg. for more than a month. It showed normal response in one (case 6), subnormal (less than 50 per cent) in the other (case 8), but the fall in eosinophils was also less than 50 per cent prior to cortisone in this case.

Undesirable effects from ACTH and Cortisone.—Among our thirty-four cases, who received only relatively small or moderately large doses for shorter periods of time, undesirable effects were seen during ACTH and cortisone therapy as shown in tables 3 and 4, respectively.

Table 4. *Untoward effects during 21 courses of Cortisone*

	No. of Cases
Hypertension	1 (case 34)
Hyperglycemia	2 (cases 26 and 34)
Glycosuria	1 (case 26)
Acne	1 (case 8)
"Moonface"	1 (case 8)

These effects (as well as the antirheumatic effect) were transitory and regressed a few days after the discontinuation of therapy, except the psychosis which probably was not due to the ACTH. No cases of masculinization (hirsutism, deep voice) change in menstrual cycle, cutaneous striae, delayed wound healing, osteoporosis, pigmentations or thrombosis were observed.

Grading of Response to Therapy.—Immediate Results: Twenty-four patients received a course of ACTH ranging from 120 to 530 mg. (average 400 mg.) during a three to twelve day period (average ten days). The results are seen in table 5. (Evaluation according to the criteria recommended by the American Rheumatic Association.[9]

Four of the patients received a second course

of ACTH, two with the same response as during the first treatment (Grade II and III, respectively), one had diminished response to the second course (Grade II to III), and one (case 8) who originally had a Grade II response had no response (Grade IV) to the second course of ACTH (600 mg. in thirteen days). He responded Grade II to intravenous ACTH, 15 mg. in 1,000 ml. glucose given daily over a twenty hour period (table 8). This is in agreement with Mandel and associates[11] observations that ACTH is more effective when administered in continuous intravenous infusion than when intramuscularly every four to eight hours.

Table 5. *Initial response of 24 patients to ACTH*

	No. of Cases	
Grade I (complete remission)	2	50 per cent
Grade II (major improvement)	10	
Grade III (minor improvement)	9	
Grade IV (unimprovement)	3	

Twenty-one patients received cortisone ranging from 400 to 2,075 mg. (average 1,000 mg.) in from four to twenty-one days (average ten days). The results are seen in table 6.

Table 6. *Initial response of 21 patients to Cortisone*

	No. of Cases	
Grade I (complete remission)	0	52 per cent
Grade II (major improvement)	11	
Grade III (minor improvement)	8	
Grade IV (unimprovement)	2	

Four of these patients received two courses of cortisone, three with the same results as previously (Grade II, III, and IV respectively).

One patient (case 8), receiving four courses of cortisone, demonstrates the importance of giving sufficiently high dosage.[12] He had a response Grade III to the first course of cortisone in daily doses of 100 mg., no response (Grade IV) to the next course in similar doses, but a Grade II response to the last course beginning with daily doses of 300 mg. (see table 7).

Table 7. *Initial response to 45 courses of ACTH or Cortisone*

	No. of Cases	
Grade I (complete remission)	2	51 per cent
Grade II (major improvement)	21	
Grade III (minor improvement)	17	
Grade IV (unimprovement)	5	

It appears from table 7 that the initial response was satisfactory in twenty-three (51 per cent) of the forty-five courses of ACTH of cortisone. Only five (11 per cent) were complete failures.

Comparison Between ACTH and Cortisone.—Eleven patients had courses of both ACTH and cortisone at different times. The same results seem obtainable in the average case (with functioning adrenal gland) from daily doses of 40 mg. of ACTH or 100 mg. of cortisone. This was observed in seven of our patients. ACTH was clinically more effective than cortisone in one case, while cortisone gave better results than ACTH in two cases.

One patient (case 8) received seven alternating courses of ACTH and cortisone (see table 8).

Table 8. *Response to 7 alternating courses of ACTH and Cortisone: Case 8*

Response to ACTH mg. 400 in 10 days	: Grade II
Response to Cortisone mg. 50 to 57 daily from August 17, 1950 to February 8, 1951	: Grade II → III → IV
Response to ACTH mg. 600 in 13 days	: Grade IV
Response to Cortisone mg. 575 in 6 days	: Grade IV
Response to Cortisone mg. 2550 in 13 days	: Grade II
Response to Cortisone mg. 2125 in 24 days	: Grade II → III
Response to ACTH mg. 15 i.v. in 20 hours	: Grade II

There was no indication in any case that stimulation therapy with ACTH gave better or longer lasting effect than substitution with cortisone. There was no significant difference in the number of desirable or undesirable effects from ACTH or cortisone in this small series.

Effect of Cortisone Administrated Intramuscularly, Orally or Intraarticularly.—Each of ten patients received cortisone intramuscularly and orally at different times. The effect from the oral administration was comparable to intramuscular administration in nine cases when one to one and one half times as large a daily dose was given by mouth. Some patients felt better with oral administration at six to twelve hours intervals instead of one daily intramuscular injection. In only one case was the effect of oral administration inferior to intramuscular injection. The action of cortisone administered by the oral route is faster (within two to eight hours) than when given intramuscularly (with six to twenty-four hours) and is largely dissipated within twelve to fourteen hours in contrast to twenty-four to forty-eight hours per the intramuscular route.

One patient developed an abscess from the injections. There was otherwise no complication to either the injection or the oral administration in tablet or liquid form.

Cortisone, 25 mg. diluted in 5 cc. saline solution was given intra-articularly in the knee every other day for two weeks in two cases (27 and 33). This therapy gave a rather severe local reaction; the joints became more painful, tender and warmer. A comparison with the contralateral diseased nontreated joint did not reveal any local beneficial effect from topical administration. This is in disagreement with Freyberg[8] who reported benefit from this therapy in eight patients, but in agreement with Hollander's experience.[13] He found no effect from cortisone intra-articularly in eleven patients. In contrast, the administration of compound F into a diseased joint in each of nine patients resulted in marked local improvement.

Grading of Response to Therapy.—Follow-up study 4 to 12 months after ACTH and Cortisone:

The immediate antirheumatic effect in 51 per cent of the courses was satisfactory and superior to any previous treatment (table 7), but the picture is unfortunately not nearly as bright on follow-up study four to twelve months after discontinuation of ACTH or cortisone (table 9).

Table 9. *Follow-up study of 34 cases 4 to 12 months after ACTH or Cortisone Therapy*

(Three of the patients (cases 6, 26, and 34) were receiving cortisone "boosters" at the time of the follow-up)

	No. of Cases	
Grade I (complete remission)	1	24 per cent
Grade II (major improvement)	7	
Grade III (minor improvement)	13	
Grade IV (unimprovement)	13	

Most relapses occur between twelve hours and a week after discontinuation of therapy. A few have retained some improvement for weeks; others have felt worse. Whether this represents a so-called "rebound relapse" (also called the "post-cortisone withdrawal syndrome") or is due to the psychic effect it must have suddenly to go back to a painful and distressing condition after having been feeling well, is difficult to say. Two patients (cases 6 and 8) appeared objectively worse shortly after treatment.

The one patient (case 14) that has remained in complete remission (Grade I) was a Stage I case of only six months duration. Such a result can be expected in many similar cases also with conservative treatment alone. Two of the patients (cases 6 and 23) have remained in major improvement (Grade II) on 50 mg. cortisone daily; one (case 34) has only minor improvement on that dose, but will improve to Grade II on 75 mg. daily. These results seem a little inferior to the results Hench and associates[14] obtained in a series of twenty-three patients, eight of which maintained 60 to 90 per cent of the improvement for from seven to fourteen months. Five patients maintained about 50 per cent of the improvement. The other ten patients maintained little or none of the improvement.

Eleven of the patients received gold therapy following the hormone administration, four of whom belong to the Grade II group, four to the Grade III group, and three to Grade IV; the latter three have not yet had what we consider a sufficient total amount of gold salt (500 to 1,000 mg.).

No synergistic effects have been noted from a combination of cortisone and gold treatment, and it is questionable whether gold has had any additional effect in these rather refactory cases. We have given gold to the patients receiving cortisone "boosters" in the hope,[1] that the maintenance dose of cortisone could be decreased, and[2] that the remission after eventual discontinuation of cortisone would be prolonged. This remains to be proven.

Pregnenolone, orally, 0.1 gm. six times daily for thirty days together with ascorbic acid (same dosage) was given to five of the patients following ACTH or cortisone therapy. No effect was noted; neither could it sustain an ACTH or cortisone induced remission nor was it able to produce a new remission.

Table 10. *Reclassification of 34 cases according to functional capacity 4 to 12 months after ACTH or Cortisone*

	No. of Cases	
Class I (complete)	3	38 per cent
Class II (adequate)	10	
Class III (limited)	11	62 per cent
Class IV (incapacitated)	10	

A reclassification of functional capacity is done (table 10) for comparison with the classification prior to treatment (table 2). One patient (case 14) went from Class II to I, two (cases 1 and 7) from Class III to II and three (cases 8, 9, and 10) from Class III to IV. The picture is, in summary, that two patients have been added to the groups able to work (Class I and II), which in that way have increased from 32 to 38 per cent of the patients; Class III and IV taken together have decreased two, but Class IV (the completely incapacitated) have increased three.

It is imposible to predict how these figures would have been had no treatment been given.

Maintenance dosage.—It appears from our experience that only the continuous daily administration can retain the effect and prevent relapse. Even after prolonged treatment relapse tends to occur when the hormones are withdrawn.[8] Bales and associates[15] have reported remissions for from seventy-four to eighty-eight days (the follow-up time) in all five patients treated with 500 mg. cortisone daily for fourteen to twenty-eight day periods. We have no experience with this form of therapy, but relatively high dosage (2,550 mg. in thirteen days) did not cause any lasting remission in case 8.

Eleven of our patients have received cortisone as intramuscular injections (50 to 150 mg.) every other day or tablets (25 to 100 mg.) daily for from one to six months, with interpolated pauses of a week's duration. Two patients have had ACTH in daily doses from 10 to 20 mg. for shorter periods. No untoward effects have been produced by these forms of therapy. Some improvements, mainly subjective (pain relief), has been obtained; but only two patients (cases 6 and 23) have remained in major improvement (Grade II) from daily doses of cortisone not exceeding 50 mg.

When we did not find it advisable to give larger doses for longer periods of time it was because we were fearful of causing permanent damage with our therapy. We do not find it justified to take a grave therapeutic risk in a nonfatal disease as rheumatoid arthritis. The risk that patients under continuous ACTH or cortisone may become physiologically dependent or suffer psychic addiction (case 6 suspect) cannot be disregarded. Decreased resistance toward infections seem to be another risk.

An increasing number of fatalities more or less apparently due to cortisone or ACTH therapy are being reported in the literature. The three main

causes of death in these reported cases have been: suicide following psychosis, vascular damage in kidneys, heart or brain, and adrenal atrophy and insufficiency.

We have seen signs of complete adrenal insufficiency (temporary?) in a case of keratosis blenorrhagica, not included in this series, receiving 35 mg. of cortisone in the last ten months, and one of us (C.S.G.) has noted two cases of coronary occlusion and one psychosis in about fifty patients with rheumatoid arthritis treated with cortisone or ACTH in private practice.

Comparison with other treatments.—This material is not comparable with other series in which conservative or gold treatment has been used as it consists mainly of severe cases refractory to other known measures.

Short and Bauer[16] had 32 per cent remissions or major improvements in 250 patients receiving only simple medical and orthopedic measures, and Cecil[17] found similar improvements in 66 per cent of 245 cases (spondylitis excluded) receiving gold salts. Similar figures have been found by other investigators (including ourselves) and these measures should not be discarded until a new treatment has proven definitely superior, especially because the remissions produced are longer lasting than the merely temporary suppression of rheumatoid activity caused by ACTH and cortisone.

RECOMMENDED USAGE OF ACTH AND CORTISONE

The indications for the use of ACTH and cortisone in rheumatoid arthritis as they appear to us at the present are as follows:

A. Short Courses:
   1. During acute exacerbations, especially when everything else fails.
   2. Prior to and during vigorous physical therapy in an attempt to restore joint function in cases that have not previously had sufficient treatment.
   3. Prior to and after plastic joint surgery.

B. Continuous Therapy:
   Only in selected cases in which benefit is obtained from daily doses of cortisone not exceeding 75 mg.

SUMMARY AND CONCLUSION

Thirty-four patients with rheumatoid arthritis, mainly of a severe refractory type which had resisted most other forms of therapy, were treated with short courses of ACTH, cortisone or both.

The initial response of forty-five courses of ACTH or cortisone revealed twenty-three patients (51 per cent) with major improvements or remissions.

On follow-up studied from four to twelve months later only eight patients (24 per cent) had retained definite benefit (remission or major improvement), two of whom are receiving cortisone "boosters" and gold therapy. Nine out of eleven patients receiving cortisone from one to six months in daily doses of 25 to 50 mg. showed only minor or no improvement.

Reclassification of functional capacity showed that two patients formerly incapacitated to a degree which made them unable to work became capable of working (one of these is receiving gold). The completely incapacitated group, on the other hand, increased with three during the observation time.

ACTH and cortisone in comparable doses seems principally to have the same effect (except in adrenal insufficiency); there was no apparent difference in therapeutic effect, number of undesirable effects or in relapse incidence.

It is concluded that only the continuous daily administration of these hormones can retain the effect and prevent relapses. Unfortunately the maintenance dose for complete remission is too high to be safe in most cases. In other cases some, mainly subjective, improvement can be obtained with a daily dose so small that it probably does not lead to untoward effects.

The indications for the usage of ACTH and cortisone in rheumatoid arthritis are outlined, and it is stressed that these remedies imply certain risks and should be used only in carefully selected cases, when other treatments have failed.

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Case Reports

WEIL'S DISEASE

REPORT OF A CASE TRANSMITTED BY A DOG BITE

ROBERT K. KIYASU, M.D.
MITCHELL HARKINS, M.D.
AND
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THE FOLLOWING case of Weil's disease is being reported because of an unusual mode of transmission by a dog bite, and to call attention to the finding of elevated blood diastase levels during the course of the patient's illness.

REPORT OF CASE

H. F., 39 year old white male (package liquor store manager) was admitted to the St. Louis City Hospital on November 14, 1950, with the chief complaints of chills, fever, weakness and myalgia of one week's duration and jaundice of three days' duration.

The patient was apparently in good health until one week prior to admission when he suddenly became ill with shaking chills and fever. For the next two days he had intermittent chills and fever, developed anorexia and myalgia which became especially severe on the third day of his illness. At that time he noticed oliguria with the passage of dark yellow urine. On the fifth day he consulted his physician who noticed the presence of jaundice and albuminuria. The patient noted pin head sized red lesions on his chest at that time.

A history was obtained that there were many rats in the patient's neighborhood and a puppy next door died of "yellow jaundice" two months previously. An autopsy was not performed on this puppy. The patient owned the mother and siblings of this puppy and one of the siblings (white dog) had been sickly for two months. This dog bit the patient one week prior to the onset of his illness.

Past History.—Past history revealed that the patient had had tuberculosis involving the lungs, thoracic vertebrae and larynx. He was discharged from a sanitorium in 1940 as an arrested case. There were no subsequent symptoms or signs indicating reactivation.

Physical Examination.—Physical examination on admission revealed a poorly developed, small, markedly jaundiced man who appeared both acutely and chronically ill. His sensorium was clear. Temperature was 99.2 F., pulse 110 per minute, respiration 30 per minute and blood pressure 85/55. There were several pin head sized petechiae. The conjunctiva and throat appeared normal. The neck was supple and mobile. No significant lymphadenopathy was present. There was marked kyphosis with angulation involving the lower thoracic and upper lumbar vetebrae. The lungs were resonant to percussion and the breath sounds vesicular. There were fine posttussive rales heard over both infraclavicular areas. The area of cardiac dulness was not enlarged. A shock was palpable over the pulmonic area. The rhythm was regular and heart sounds were of good quality. A grade III high pitched blowing decrescendo diastolic murmur was heard over the pulmonic area. The pulmonic second sound was greatly accentuated. The liver was palpable 2 cm. below the right costal margin on deep inspiration and extremely tender. The spleen was not palpable. Rectal examination revealed bleeding internal hemorrhoids. There was exquisite tenderness on palpation of the gastrocnemius and deltoid muscles. Neurologic examination was within normal limits. Laboratory data on admission was 5,850 white blood cells with differential showing 4 juveniles, 8 stabs, 68 segmented, 16 lymphocytes and 4 mononuclears. Reticulocyte count was 1.5 per cent, red blood count 3,330,000 and Hb. 11 grams. Urine was dark yellow, specific gravity 1.010, negative for sugar, trace of albumin, occasional white blood cell and no red blood cells or casts. Bilirubin was positive, urobilinogen positive only in undiluted specimen. Rumpel-Leede test was strongly positive. Bleeding time was 3 minutes and clotting time 6 minutes. Spinal fluid showed an initial pressure of 150 mm., was light greenish yellow and clear. Spinal fluid cell count was 100 white blood cells with 60 per cent polymorphonuclear and 40 per cent mononuclear cells and no red blood cells. Pandy test was negative.

Table 1. *Liver Function Tests*

	Nov. 16	Nov. 21	Nov. 30	Dec. 7	Jan. 1, 1951
C. C. Floc. 24 hours	2+	2+	neg.	neg.	neg.
C. C. Floc. 48 hours	3+		neg.	1+	neg.
Thymol. turb.	7.0	12.0	7.4		2.2
Alk. phos. B.U.	1.7	5.2	4.3	2.0	1.1
Protein, total grams per cent	6.50	7.05	6.50	6.90	7.60
Serum alb. grams per cent	3.77	4.28	3.58	4.34	5.30
Serum glob. grams per cent	2.73	2.77	2.92	2.56	2.30
Ratio	1.38	1.58	1.23	1.70	2.30
Cholesterol, total mg. per cent	82	129	222	194	189
Cholesterol, esters mg. per cent	16	23	142	167	128
Per cent esters	20%	18%	64%	86%	68%
Serum bilirubin, total mg. per cent	20.8	19.8	5.6	5.6	1.3
Serum bilirubin, direct (1') mg. per cent	13.6	10.7	2.7	2.2	.8
Urine urobilinogen	pos.	neg.	neg	neg.	neg.
Diastase (Somoygi units)	300	790	535	354	375

A battery of liver function tests taken two days after admission (table 1) showed evidence of hepatocellular damage, the most marked changes being reflected in the serum cholesterol levels, both total and esters, and the marked elevation of serum bilirubin. Repeated serum diastase levels were consistently elevated ranging from 300 to 780 Somoygi units. The blood urea nitrogen was 80 mg. per cent. A gastrocnemius muscle biopsy done on the fourteenth day of illness revealed the presence of focal small vacuoles in a few fibers and focal areas of slightly basophilic degeneration in many fibers with loss of striation and fragmentation. The sarcolemma about these foci showed proliferation with increased

Table 2. *Urine Tests*

	Nov. 16	Nov. 21	Nov. 24	Nov. 30	Dec. 7	Jan. 2, 1951
BUN mg. per cent	80	80	40	33	28	17
Urine specific gravity	1.010	1.012	1.012			
24 hour urinary output	1700cc.	3700cc.	3600cc.			

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number of nuclei. Also present in one field was an encysted parasite surrounded by a capsule with a halo of basophilic material (larva of Trichinella spiralis).

Agglutination tests* for L. ictohemorrhagiae on the serum of both the patient and the dogs with which he had contact were performed (table 3). The serums

Table 3. *Agglutination Test Results*

Antigen	1:200	1:400	1:800	1:1600	1:5200	1:6800
Patient 15th day of disease....Ictohemorr.	4+	4+	3+	2+	0	0
Patient 30th day of disease....Ictohemorr.	3+	3+	3+	2+	1+	0
Mother dog.....Ictohemorr.	2+	2+	0	0	0	0
White sibling...Ictohemorr.	4+	4+	4+	4+	2+	2+
Tan sibling.....Ictohemorr.	3+	0	0	0	0	0

of the patient and the dog that bit him were strongly positive.

Dark field examination, culture on chorioallantoic membrane and guinea pig innoculation were done on sera, urine and spinal fluid, but no leptospira could be demonstrated.

Hospital Course.—Therapy consisted of penicillin 100,000 units intramuscularly every three hours and aureomycin 1.5 gm. every three hours. The patient also received intravenous glucose, vitamins and whole blood. The initial response to therapy was dramatic in that the muscle tenderness subsided and appetite improved. It took much longer for the jaundice and blood urea nitrogen retention to subside. A repeat lumbar puncture on December 4, 1950 (fourth week of illness) showed 30 lymphocytes. Serial liver profiles (table 1) and serial BUN's (table 2) are shown. Aureomycin was discontinued after one week and penicillin after three weeks. Patient was afebrile throughout his entire hospital course. He gradually regained his strength and weight and was discharged on the thirty-third hospital day.

DISCUSSION

This patient presented a rather typical clinical picture of Weil's disease as reviewed by Ashe et al.[1] The history of sudden onset with chills and fever, severe myalgia, presence of petechaie, jaundice and oliguria suggested the clinical diagnosis. The patient had spinal fluid pleocystosis, a common finding which Cargill and Beeson[2] have recently reemphasized. Lesions in the striated muscles first described by Jeghers et al.[3] and later proposed by Sheldon[4] as an adjunct to diagnosis were present.

Because of the history of a recent dog bite and also of contact with a dog that died of "yellow jaundice," agglutination tests were performed on the living dogs with which this patient had contact. The finding of a high titer against L. ictohemorrhagiae in the serum of the white dog which bit the patient gave rather conclusive proof as to the mode of transmission in this case. This was the sibling of the dog that died of "yellow jaundice" two months previously. The dog had been sickly and malnourished, and an autopsy was performed on it when the results of the agglutination tests were obtained. Examination of the liver, muscle, kidney and pancreas did not show any of the changes described in Weil's disease, nor could spirochetes be demonstrated with Levaditis stain. Injection of a catherized urine specimen from this dog into a 200 gram guinea pig did not kill the guinea pig. Similar studies done on a rat caught in the patient's neighborhood were also negative for Leptospira.

The elevated blood diastase levels were an unexpected finding during the course of this patient's illness. The exact mechanism for this is unknown, but it is suspected that the following factors may be responsible: first, an interstitial pancreatitis as described in autopsy protocols;[1] and secondly, blood diastase retention due to decreased urinary excretion of the enzymes.

* Performed in the laboratories of Dr. Paul Beeson, Grady Memorial Hospital, Atlanta, Georgia.

SUMMARY

A case of Weil's disease transmitted by a dog bite is presented. The finding of elevated blood diastase levels in this disease is reported and the mechanisms which may be responsible are described.

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TERRAMYCIN USED TO TREAT TYPHUS, DYSENTERY AND TYPHOID

Terramycin is believed to be curative in treating epidemic typhus, useful with limitations in acute amebic dysentery and may be effective in some cases of typhoid, according to a report in the December 29 *Journal of the American Medical Association.*

The report was prepared by Drs. John H. Killough and Gordon B. Magill, of the department of clinical investigations of the U. S. Naval Medical Research Unit No. 3, Cairo, Egypt.

The doctors successfully used terramycin in the treatment of five persons suffering from epidemic typhus, one of whom was considered to be fatally ill. Subjective and objective improvement of all patients was observed within twenty-four hours after treatment was begun.

Seven persons suffering from amebic dysentery were given an average of 66 grams of the antibiotic over a fourteen-day period. Improvement was noted in all patients within eight days.

Inflammation of the liver, accompanying the disease, disappeared slowly, however. One of the patients developed an abscess of the liver during treatment, and required the additional use of chloroquine to effect a cure.

TETRAETHYL PYROPHOSPHATE IN THE TREATMENT OF MYASTHENIA GRAVIS

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WITHIN THE last two years a new and useful adjunct for the treatment of myasthenia gravis has been reported.[1-6] Burgen, Keele and McAlpine[2] were the first to report the clinical use of Tetraethyl Pyrophosphate (TEPP) in the treatment of this disease in April 1948. TEPP is considered a "powerful anticholinesterase" whose actions resemble those of prostigmin and eserine and is about ⅓ to ½ as potent as prostigmin and eserine. It is well tolerated orally and readily absorbed by the gastrointestinal tract when taken in the suggested dosage. Burgen et al.[2] reported three cases of myasthenia gravis treated with TEPP and found it to be a "completely effective substitute" for prostigmin; however, TEPP is more cumulative in action than is prostigmin and therefore requires a keen eye to differentiate the effects of overdosage and that of inadequate dosage. The central side effects of TEPP are: vertigo, nystagmus, pallor, sweating, nausea, vomiting, muscular fasciculations, miosis, salivation, bradycardia, restlessness and, occasionally, headache. The visceral side effects are: colic and diarrhea which may be abolished effectively with atropine grain 1/75 given subcutaneously. As Atkinson[4] reported, and I would emphasize that an increase in dosage of TEPP beyond its maximum effectiveness will produce generalized weakness, syncope and total circulatory collapse to the point of severe shock. This may be confused with an inadequate dosage of TEPP and may lead to serious consequences. Artificial respiration and the use of atropine subcutaneously may be necessary until the effects of TEPP have subsided. Additional observations reveal that TEPP causes a rapid fall in cholinesterase activity during the first hour and that neostigmine has a blocking effect on TEPP.[5, 6] It is therefore advisable as reported by Atkinson that TEPP be administered "four or more hours after the last dose of neostigmine and one or more hours before the next dose of neostigmine." Reports of cases treated with TEPP have been indeed encouraging and because of a need for a more effective substitute than prostigmin it has been a stimulus in the treatment of the case reported.

The present supply of TEPP is made available in an anhydrous liquid mixture (1.68 cc. containing 2 gms. of TEPP).* The vial, once opened, must be kept in a dessicator containing anhydrous $CaCl_2$ if small doses of this mixture are removed at intervals. TEPP is unstable and its potency decreases if in contact with any moisture. A thoroughly dry ¼ cc. BD syringe and 27 gauge needle are used to withdraw the TEPP from the vial and 0.08 cc. (0.1 gm.) is added to a rubber stoppered vial containing 9.92 cc. of anhydrous propylene glycol. Each dose is then measured out with an absolutely dry 1 cc. tuberculin syringe (0.1 cc. = 1 mg. TEPP) and mixed with approximately 30 cc. of water or milk[3] and given immediately to the patient. Atkinson suggests that it be given after meals to prevent nausea.

*Pure tetraethyl pyrophosphate was supplied by Dr. C. G. Weigand, Head, Medical Department, Eli Lilly and Company, Indianapolis, Indiana.

CASE REPORT

J.W.W. was a well developed, slightly undernourished white male, retired U. S. Deputy Marshall, 72 years of age who was fairly well until about six months prior to his admission on August 30, 1950, to the Smithville Community Hospital. At that time he began to note progressive generalized muscular weakness, easy fatigability and anorexia. At about the same time he noted frequent episodes of incontinence of urine and occasionally of bowel movements, which he attributed to "weak kidneys." He then noted progressive weakness in his back which caused him to stoop and use a cane to aid him in walking. It was not until he began to experience intermittent episodes of difficulty in swallowing, diplopia, ptosis of his eyelids and dysarthria in July 1950 that he sought medical advice. He went to a urologist who, after recognizing his complaints as a medical problem, referred him to an internist. He was then told that he had myasthenia gravis and was sent home with advice to take one 15 mg. tablet of prostigmin orally each time these symptoms should recur.

In spite of this dosage schedule the patient found it difficult to even swallow the tablets during an acute exacerbation of his symptoms. He was given two ampules of prostigmin 1:2000 and then admitted to the hospital for injectable and oral prostigmin management.

Physical Examination—The patient was a markedly weak, expressionless white male in acute respiratory distress. Ptosis of both eyelids, especially on the left, and gaping mouth due to weakness of his masseter and temporal muscles was evident. Left lateral gaze and convergence was impossible for him to perform. His posterior cervical muscles were extremely weak and it was difficult for him to raise his head. He complained of extreme difficulty in swallowing. A laryngeal stridor on inspiration and expiration was noted. Chest findings and cardiac examination revealed no abnormality. An x-ray film of the anterior mediastinum failed to reveal a mass (thymoma). The abdomen and extremities revealed no significant abnormality. Reflex activity both deep and superficial were sluggish. Muscular tonus was poor. A lemon sized benign prostatic hypertrophy was found but caused no obstruction or residual of urine.

His symptoms became progressively worse and the patient remained bedfast. A laryngeal stridor was apparent at times which increased the patient's apprehension of a "fear of choking to death." His requirements for prostigmin rapidly increased to as high as twenty-nine 15 mg. tablets daily or twenty to thirty ampules of injectable 1:2000 prostigmin daily or both in divided doses. The patient was incontinent of urine and feces and had extreme difficulty in breathing and swallowing.

On October 21, he was started on 2 mg. of TEPP twice daily. This was increased to 4 mg. twice daily the following day. He was unable to swallow the prostigmin tablets and therefore required intravenous fluids and injectable prostigmin frequently. The daily requirements for TEPP gradually increased daily until he received 12 mg. twice daily on November 7. Paralleling the increase in TEPP was a corresponding decrease in prostigmin requirements. At that point

the patient's TEPP dosage was promptly reduced to 9 mg. twice daily. The dosage was varied between 7 and 10 mg. twice daily according to the patient's needs. With each dose of TEPP he received atropine gr. 1/150 subcutaneously. Between December 1, 1950, and January 1, 1951, the patient was demonstrating a favorable response to TEPP. He felt stronger, ate better, rarely experienced any stridor and could breath better. Then on the evening of January 2, 1951, the patient became markedly weak, incoherent, lapsed into unconsciousness and showed signs of profound shock. Pulse and blood pressure were momentarily unobtainable. The patient was given atropine grain 1/75 subcutaneously with prompt return of his blood pressure to 100/60 and slow pulse of 40 per minute. TEPP was then discontinued until January 8 at which time noticeable effects of myasthenia were beginning to recur. He was then given 4 mg. of TEPP twice daily, gradually increased to 8 mg. twice daily with no untoward side effects. This dosage schedule had been maintained until his discharge. The patient was discharged from the hospital on January 11, 1951, and for six months had led a somewhat sedentary life in his home. On occasion the patient had required injections of 1:2000 prostigmin in the home because of his dysphagia and dysarthria. He had taken from one to two tablets of 15 mg. of prostigmin bromide, two or three times daily in addition to his TEPP. The TEPP was prepared for his usage every three days by the clinic and was administered to him by his wife who had been instructed in the preparation of his syringe and means of administering the medication.

CONCLUSIONS

TEPP is an excellent adjunct in the treatment of myasthenia gravis. The case cited demonstrates the necessity of combined therapy with TEPP and prostigmin in the severe myasthenia gravis. TEPP is not without severe side reactions which must be dealt with promptly should they occur. Toxic reactions to overdosage of TEPP may simulate a few of the symptoms of myasthenia gravis and should be anticipated, especially if large doses of TEPP are used.

The advantages of TEPP are: (1) inexpensive compared to prostigmin, (2) reduces need for prostigmin in the severe myasthenia gravis, (3) effectiveness is longer than prostigmin, (4) has been found to be of value in prostigmin refractive patients.

The disadvantages of TEPP are: (1) mode of preparation, (2) frequency of preparation due to the instability of the substance, (3) need of special equipment in its preparation, (4) need for marked accuracy in control of the dosage.

Addendum: On June 13, 1951, I was summoned to the patient's home. The patient had expired just prior to my arrival. Notes taken from his record revealed that he was becoming progressively weaker during the six weeks prior to his death. His dosage of TEPP was reduced on three occasions to 6 mg. twice daily which resulted in increasing myasthenia, dysphagia and episodes of laryngeal stridor. His needs for prostigmin increased and could only be administered by the subcutaneous route. On increasing TEPP to 8 mg. twice daily he improved slightly but complained of severe difficulty in deglutition. Although he had taken atropine gr. 1/150 sublingually with each dose of TEPP, he would experience considerable salivation. Death occurred rather suddenly and was probably due to marked myocardial weakness as a result of his long standing illness. Autopsy was not done.

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NECK PAIN CAN BE A SERIOUS THING

Many common, every-day afflictions cause severe neck pains, the diagnosis of which may be obvious on short examination or may require meticulous history, careful physical and neurologic examination, and certain laboratory tests, according to Drs. James E. Watson, Jr., and Sylvester W. Thorn, Houston, Texas.

In children, acute neck pain is usually due to an infectious process in the nose or throat, the central nervous system or the lymph nodes, the doctors wrote in the January 5 *Journal of the American Medical Association.*

In adults, they said, neck pain is often due to dental or other oral infections, postural and structural changes in the neck, muscular affections and injuries. In the elderly, such pain may be due to cervical arthritis, blood vessel disease or malignant tumors.

Among the diseases which cause such pain are a sore throat, diphtheria, infections of lymph nodes and glands resulting from German measles and mumps, meningitis, meningism and poliomyelitis.

Boils, carbuncles and cysts anywhere on the neck are common causes of neck pains, the doctors stated, as are a thryroid condition, goiter, certain skin inflammations of the neck, inflammations of the mouth and osteomyelitis.

Acute neck pain often may be associated with, or as the presenting symptom of, a virus infection of the respiratory tract, according to the doctors. Tumors, arthritis, tuberculosis of the larynx, syphilis and bursitis are also causes.

Certain types of heart conditions may even cause neck pain, as may various diaphragmatic and abdominal diseases, it was stated.

However, the doctors pointed out, not all neck pain points to a serious affliction. An old-fashioned "crick in the neck" is probably just due to the sudden onset on awakening after sleep, exposure to inclement weather, or just too tight a collar.



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Banthine—a true anticholinergic drug with an adequate range of safety—is now made available to the medical profession in parenteral form, for use intravenously or intramuscularly in those conditions characterized by nausea and vomiting, when oral medication cannot be retained and when a prompt action is desirable.

Through its anticholinergic effects, Banthine inhibits excess vagal stimulation and controls hypermotility.

In Peptic Ulcer—the value of the oral form of Banthine is now well established. However, edema in the ulcer area may indicate parenteral Banthine until the healing processes have reduced the edema.

In Pancreatitis—it has been found that parenteral Banthine relieves pain, effects a fall in blood amylase and produces a general improvement in the patient's condition.

In Visceral Spasm—it inhibits motility of the gastrointestinal and urinary tracts.

Parenteral BANTHĪNE is supplied in serum-type ampuls containing 50 mg. of Banthine powder. Adult dosage is generally the same as with Banthine tablets.

ACCEPTED COUNCIL ON PHARMACY AND CHEMISTRY AMERICAN MEDICAL ASSOCIATION

RESEARCH IN THE SERVICE OF MEDICINE **SEARLE**

PRESIDENT'S PAGE

Where ought a man in the medical profession leave off being a doctor of medicine and become a citizen? The answer each one of us gives to this question in the months ahead may have a direct bearing on the future of medical science in the United States—to say nothing of its bearing on the general circumstances of freedom in the world.

It is all too easy and all too frequent for a doctor to feel that he does his full duty in discharging his responsibilities to his patients. It is plausible for a medical man to relax in the belief that the time he gives to his community in free work for the relief of suffering is a full discharge of his public responsibility.

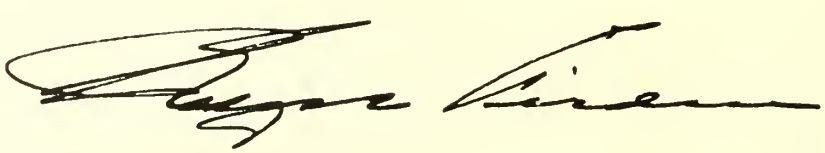


A complete citizen, however, is something more than the mere provider of service to his fellow man—however important and humane that service may be.

In democratic theory every citizen shares in the total responsibility of a free people to make his influence felt in the political processes that determine the course of his government and his society. It is a basic duty of citizenship—to be informed and active in matters of general concern—that is distinct from the conscientious discharge of professional duties, and it is just as important.

As we read our newspapers today, we must be conscious of the increasing pitch of interest in political decisions. We are approaching a great national election in which great issues will be determined. Up to now too many doctors have left it to their representatives in medical organizations to make the influence of our profession felt in public life. These organizations have done splendid work.

In the last analysis, however, this is a job that every citizen must do for himself. He must do it by study, by conversation, by participation in community life and, finally and ultimately, by voting. It is my hope that the medical profession in Missouri in the months ahead will give a better account of itself in public life than our profession in general has succeeded in doing in the past.



Editorials

ANNUAL SESSION

The scientific program for the ninety-fourth Annual Session of the Missouri State Medical Association will appear in full in the March issue of THE JOURNAL. The Annual Session will be held at Hotel Jefferson, St. Louis, March 30 through April 2.

Television will not be shown this year and the entire scientific program will be presentations, with the exception of motion pictures at the start of each session. There will be four symposia, on "Obstetrics," "Pediatrics," "Surgery" and "Medicine." Two of the symposia will be presented simultaneously on Monday morning and two on Tuesday morning. Round table luncheons with question and answer periods will be held each day of the session.

A scientific program will be presented on Wednesday afternoon on "What's New in Medicine." This will consist of short presentations by guest and Missouri physicians, followed by a discussion period.

The Annual Banquet in Honor of Past Presidents will be held on Tuesday evening, April 1, instead of on Monday evening as has been done in former years. Louis H. Bauer, M.D., Hempstead, New York, President-Elect of the American Medical Association, will be the guest speaker at the banquet.

The House of Delegates will meet on Sunday, March 30, at 2:00 p. m., at 4:00 p. m. on Monday for a recessed session and will hold its final session on Wednesday afternoon, April 2, at 1:30 p. m.

The Missouri Society of Medical Technologists and the Missouri Physical Therapy Association will meet at the same time as the Association.

The Woman's Auxiliary to the Missouri State Medical Association will meet on March 30 and April 1 and 2.

GROWTH OF VOLUNTARY INSURANCE

At least half of the nation's population was covered by some type of voluntary protection against the economic hazards of sickness and accident at the end of 1950, according to a recent report of the Health Insurance Council. The Council is made up of nine trade associations in the life insurance and casualty fields.

The coverage in hospital expense protection increased by 17 per cent during the year 1950, from 66,044,000 to 76,961,000 persons, and the number of people covered by this type of insurance has doubled since the end of World War II.

Protection against surgical expense increased from 41,143,000 to 54,477,000, or 32 per cent, during the year. A 28 per cent increase was recorded in medical expense protection, from 16,862,000 at the beginning of the year to 21,589,000 at the end of the year.

COMMUNITIES WITH SANITATION REGULATIONS INCREASE

The number of Americans living in communities which have sanitation regulations for public eating and drinking establishments that meet standards developed by the U. S. Public Health Service has more than doubled in the last five years according to the U. S. Public Health Service.

Ordinances or other regulations meeting Public Health Service standards are now in effect in 675 municipalities and 346 counties in forty-two states and the Territory of Alaska and the District of Columbia. The combined population having this protection now totals more than eighty-two million.

In November 1946, when the last tabulation was made, it is pointed out that the combined populations affected totaled only forty million. Besides the District of Columbia, ordinances meeting Public Health Service standards were then in force in only 373 municipalities and 176 counties in thirty-seven states and Alaska.

The standard by which municipal or county regulation of eating and drinking establishments is judged is the "Restaurant Sanitation Ordinance Recommended by the Public Health Service" which was first issued in 1935 and revised in 1938, 1940 and 1943.

The latest list of communities which have either adopted the recommended ordinance in total or have incorporated its essential features in their regulations for public eating and drinking establishments includes forty-nine cities of more than 100,000 population and forty-three cities of 50,000 to 100,000 population. Twenty states now enforce the recommended ordinance on a state-wide basis.

The model ordinance was developed as an aid in protecting citizens against food borne diseases emanating from public eating and drinking establishments. This has always been a serious public health problem, and it is still a serious problem.

A great deal is known about food borne diseases and how to prevent them but this knowledge has to be translated into practical programs. In the last several years the number of public eating and drinking places has so increased that a uniform standard for sanitation of such establishments becomes increasingly important. The ordinance recommended by the Public Health Service, revised repeatedly as new knowledge has developed and as conditions have changed, is designed to meet that need.

The recommended ordinance is published by the Milk and Food Branch of the Public Health Service's Division of Sanitation.

Organization and Economics

NEWS NOTES

The Mid-Continent Psychiatric Association will meet in Kansas City, Hotel President, April 26 and 27. This is a district branch society of the American Psychiatric Association and consists of Missouri, Kansas, Arkansas and Oklahoma. Among speakers will be Leo H. Bartemeier, M.D., President of the American Psychiatric Association; Francis J. Braceland, M.D., Psychiatrist in Chief, The Institute of Living, Hartford, Connecticut, and Dexter M. Bullard, M.D., Medical Director, Chestnut Lodge Sanitarium, Rockville, Maryland. All interested physicians are invited to attend and further information may be obtained from the secretary, Paul Hines, M.D., 2625 West Paseo, Kansas City.

The American Diabetes Association has announced the inauguration of a new bimonthly scientific journal, "Diabetes," to appear in mid-January 1952. It will supplant the American Diabetes Association's "Proceedings" and its quarterly "Diabetes Abstracts," which will be continued as a department in the new journal.

St. Louis City Hospital No. 1 Alumni Association will hold a dinner meeting at the time of the Annual Session of the Missouri State Medical Association. The time and place of the meeting will be announced to members a little later.

MUSINGS OF THE FIELD SECRETARY

Denver, Colorado, furnishes the stage for the seventh National Conference on Rural Health, February 29 and March 1. All sessions will be held in the Shirley-Savoy Hotel. This conference, sponsored by the American Medical Association's Council on Rural Health in cooperation with national farm organizations, has as its theme this year "Help Yourself to Health."

The program is built around the thesis of community self-help and self-reliance through local organizations which bring the force of numbers to bear on solutions to local health problems.

This conference portends to substitute the practical for the theoretical. Instead of having related what might and should be done if certain things were available, the emphasis will be placed on revealing what is actually being tried and accomplished in various localities in rural United States as relates to the theme "Help Yourself to Health."

On the two day program will appear physicians, farm leaders, educators and others who are assuming leadership in the promotion of improved rural health. A. E. Seplman, M.D., Smithville, Chairman of the Committee on Rural Health of the Missouri State Medical Association, has been asked to discuss "Health Councils From the Physician's Standpoint."

The day prior to the opening of the conference will find members of state rural health committees getting together to discuss activities of their committees.

Anyone interested in rural health may find attendance at the conference both interesting and profitable.

Constitution Introduced at 1951 Annual Session

A new Constitution for the Association was introduced in the House of Delegates at the 1951 Annual Session and in accordance with the Constitution and By-laws was laid on the table for one year. The Constitution and By-laws also stipulate that any change in the Constitution must be published twice in THE JOURNAL. It was published in the July issue and this is the second publication. The proposed Constitution follows.

ARTICLE I. NAME OF THE ASSOCIATION

The name and title of this organization shall be the Missouri State Medical Association.

ARTICLE II. PURPOSE

The purpose of this Association is the promotion of the science and art of medicine, the protection of public health, the betterment of the medical profession, and, by uniting with similar organizations in other states and territories of the United States, to form the American Medical Association.

ARTICLE III. MEMBERSHIP

Membership in this Association shall be limited to and include all members in good standing in component societies which hold charters from this Association.

ARTICLE IV. HOUSE OF DELEGATES

The House of Delegates shall be the legislative body of this Association and shall consist of delegates elected by the component societies. It shall elect a Speaker and Vice Speaker from its body. Its Secretary shall be the Secretary of the Missouri State Medical Association.

ARTICLE V. COUNCIL

The Council shall be the executive body of this Association when the House of Delegates is not in session. It shall be the judicial body of the Association when matters are referred to it for decision by the Association, by component societies or by individual members thereof. It shall consist of the President, President-Elect, Secretary, Treasurer and the duly elected Councilors from each Councilor District. Nine members shall constitute a quorum.

ARTICLE VI. SESSIONS AND MEETINGS

Section 1. The Association shall hold an Annual Session at a place fixed by the House of Delegates, the time of which shall be fixed by the Council.



All Children Can Benefit from *this* Protective Hot Drink at Breakfast

In its widely distributed leaflet No. 268, "Eat a Good Breakfast," the U. S. Dept. of Agriculture states: "Summer or winter, there's something hot, as a rule, in a good breakfast.... Something hot is cheering and tones up the whole digestive route."

The problem of encouraging children to eat an adequately protective breakfast finds easier solution when Ovaltine in hot milk is recommended as a breakfast beverage. Many children clamor for a hot drink at the morning meal, and hot Ovaltine is the right kind of drink to recommend.

A cup of hot Ovaltine makes an excellent contribution of virtually all essential nutrients, adding substantially to the nutritional start for the day. It also serves in a gustatory capacity by enhancing the appeal of breakfast and making other foods more inviting.

The nutrient contribution made by a cup of Ovaltine is apparent from the table below. Note the wealth of essentials added to the nutritional intake by making the simple recommendation of adding a cup of hot Ovaltine to the child's breakfast.

THE WANDER COMPANY, 360 N. MICHIGAN AVE., CHICAGO 1, ILLINOIS



Ovaltine

Here are the nutrients that a cupful of hot Ovaltine, made of ½ oz. of Ovaltine and 8 fl. oz. of whole milk,* provides:

PROTEIN	10.5 Gm.	IRON	4 mg.	NIACIN	2.3 mg.
FAT	10.5 Gm.	COPPER	0.2 mg.	VITAMIN C	10 mg.
CARBOHYDRATE	22 Gm.	VITAMIN A	1000 I.U.	VITAMIN D	140 I.U.
CALCIUM	370 mg.	VITAMIN B_1	0.39 mg.	CALORIES	225
PHOSPHORUS	315 mg.	RIBOFLAVIN	0.7 mg.		

*Based on average reported values for milk.

Sec. 2. Special meetings of the Association or of the House of Delegates may be called by a two third vote of the Council and shall be called upon a petition signed by members equal in number to one third of the total number of delegates certified for the last Annual Session.

Article VII. Officers

Section 1. The officers of this Association shall be a President, a President-Elect, three Vice Presidents, a Secretary, a Treasurer, a Speaker and a Vice Speaker of the House of Delegates and ten Councilors selected as provided for.

Sec. 2. All officers except Councilors shall be elected annually. The terms of Councilors shall be two years. Half of the membership of the Council shall be elected each year. The Secretary and the Treasurer shall be elected by the Council. The delegates present from each Councilor District shall meet on the morning of the last day of the Annual Session and elect the Councilor from that district. In the event of death, resignation or removal of any Councilor, the Council may appoint a successor to serve until the vacancy is filled at the next Annual Session. All of the officers shall serve until their successors are elected and installed.

Article VIII. Funds, Expenses and Budget

Funds shall be raised by a per capita assessment on each component society. The amount of the assessment shall be fixed by the House of Delegates. Funds may also be raised in any other manner approved by the House of Delegates. The Council shall submit an annual budget to the House of Delegates. All resolutions providing for appropriations shall be referred to the Council and all appropriations approved by the Council shall be included in the annual budget.

Article IX. Referendum

At any General Meeting of the Association it may, by a two thirds vote, order a general referendum upon any question pending before the House of Delegates. The House of Delegates may, by a vote of its members, submit any question to the membership of the Association for its vote. A majority vote of all members of the Association shall determine the question.

Article X. Seal

The Association shall have a common seal. The power to change or renew the seal shall rest with the House of Delegates.

Article XI. Amendments

The House of Delegates may amend any article of this Constitution by a two third vote of the delegates present and voting at any Annual Session, provided that such amendment shall have been presented in open meeting at the previous Annual Session and that it shall have been published twice during the year in The Journal of this Association or sent officially to each component society at least two months prior to the meeting at which final action is to be taken.

A.M.A. DUES FOR 1952

1. American Medical Association membership dues for 1952 are $25.00.

2. Fellowship dues for 1952 have been abolished.

3. American Medical Association membership dues are levied on "active" members of the Association. A member of a constituent association who holds the degree of Doctor of Medicine or Bachelor of Medicine and is entitled to exercise the rights of active membership in his constituent association, including the right to vote and hold office as determined by his constituent association, and has paid his American Medical Association dues, subject to the provisions of the By-Laws, is an "active" member of the Association.

4. American Medical Association membership dues are payable through the component county medical society or the constituent state or territorial medical association, depending on the method adopted locally. (State Medical Association in Missouri.)

5. Commissioned medical officers of the United States Army, the United States Navy, the United States Air Force or the United States Public Health Service, who have been nominated by the Surgeons General of the respective services, and the permanent medical officers of the Veterans Administration and the Indian Service, who have been nominated by their Chief Medical Directors, may become Service Fellows on approval of the Judicial Council. Service Fellows need not be members of the component county or constituent state or territorial associations or the American Medical Association. They do not receive any publication of the American Medical Association except by personal subscription. If a local medical society regulation permits, a Service Fellow may elect to become an active member of a component and constituent association and the American Medical Association, in which case he would pay the same membership dues as any other active member and receive a subscription to *The Journal of the American Medical Association.*

6. An active member of the American Medical Association may be excused from the payment of American Medical Association membership dues when it is deemed advisable by the Board of Trustees, provided that he is partially or wholly excused from the payment of dues by his component society and constituent association.

The following may be excused in accordance with this provision: (a) members for whom the payment of dues would constitute a financial hardship as determined by their local medical societies; (b) members in actual training but not more than five years after graduation from medical school; (c) members who have retired from active practice; (d) members who have reached the age of 70, on request, and starting January 1 following the 70th birthday, and (e) members who are called to active duty with the armed forces (exemption begins July 1 or January 1 following entrance on active duty). The last two categories are excused from A.M.A. dues regardless of local dues exemptions.

7. Active members of the American Medical

Association are not excused from the payment of American Medical Association membership dues by virtue of their classification by their local societies as "honorary" members or because they are excused from the payment of local and state dues. Active members may be excused from the payment of American Medical Association membership dues only under the provision described in paragraph 6.

8. American Medical Association membership dues include subscription to *The Jouranl of the American Medical Association.* Active members of the Association who are excused from the payment of dues will not receive *The Journal* except by personal subscription at the regular subscription rate of $15.00 a year.

9. Members may substitute one of the special journals published by the Association for *The Journal* to which they are entitled as members.

10. A member of the American Medical Association who joins the Association on or after July 1 will pay membership dues for that year of $12.50 instead of the full $25.00 membership dues.

11. An active member is delinquent if his dues are not paid by June 1 of the year for which dues are prescribed and shall forfeit his active membership in the American Medical Association if he fails to pay the delinquent dues within thirty days after the notice of his delinquency has been mailed by the Secretary of the American Medical Association to his last known address.

12. Members of the American Medical Association who have been dropped from the Membership Roll for nonpayment of annual dues cannot be reinstated until such indebtedness has been discharged.

13. The apportionment of delegates from each constituent association shall be one delegate for each 1,000, or fraction thereof, active members of the American Medical Association as recorded in the office of the Secretary of the American Medical Association on December 1 of each year.

TRIBUTE TO CARL F. VOHS, M.D.

In a recent issue of *The Bulletin of the St. Louis Medical Society* the following letter from Mr. Joseph F. Kelly, Jr., Chairman, St. Louis and St. Louis County Chapter, National Foundation for Infantile Paralysis, was printed:

"By an act of the Executive Committee of the St. Louis and St. Louis County Chapter of the National Foundation for Infantile Paralysis, I have been instructed to express to you and the St. Louis Medical Society our profound appreciation for the splendid cooperation this chapter has received in the past two years from the medical profession.

"Under the wonderful leadership of Dr. Carl F. Vohs, chairman of the Medical Advisory Committee, the program of medical care for polio patients has been greatly expanded and improved. It may truthfully be said that the polio patients of St. Louis and St. Louis County, mainly through the efforts and cooperation of the medical profession, are receiving the best possible care.

"So far as this chapter is concerned, we hope always to merit the approval and cooperation of the medical profession and we shall always do everything in our power to maintain the fine relationship existing between the chapter and the profession.

"I hope you will find it expedient to bring this letter to the attention of your membership by insertion in the *Medical Society Bulletin.*"

The comment on the letter in *The Bulletin* closed as follows: "None of these things 'just happened.' Carl Vohs has been the prime coordinator of all of these activities, and the medical Society welcomes this opportunity to join the St. Louis and St. Louis County Chapter of the National Foundation for Infantile Paralysis in a well deserved tribute to him."

COUNCILOR DISTRICT NEWS

FIRST COUNCILOR DISTRICT

DONALD M. DOWELL, CHILLICOTHE, COUNCILOR

Clay County Medical Society

The Clay County Medical Society met in regular session with the Auxiliary on November 27 at Rugel's Cafe in North Kansas City. Twenty-four members and their wives and several guests were present.

After dinner the ladies adjourned to the office of Dr. Robert Parker for their meeting.

The business meeting of the Society was held at the cafe.

Damon Walthall, M.D., Kansas City, gave an interesting and well received paper on "Care of the Newborn for the First Year."

S. R. McCracken, M.D., Secretary.

SECOND COUNCILOR DISTRICT

W. F. FRANCKA, HANNIBAL, COUNCILOR

THIRD COUNCILOR DISTRICT

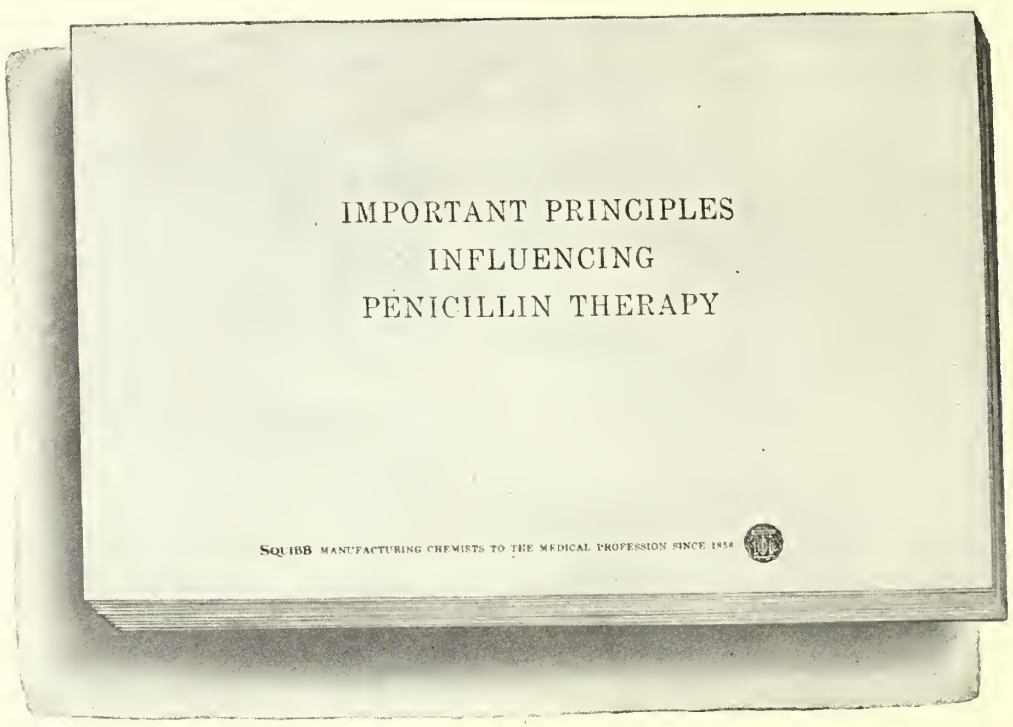
ARMAND D. FRIES, ST. LOUIS, COUNCILOR

Edwin F. Gildea, M.D., St. Louis, will be a guest lecturer at the fourth annual Neuropsychiatric Meeting to be held at the Veterans Administration Hospital, North Little Rock, Arkansas, on February 28 and 29.

Melvin A. Casberg, M.D., St. Louis, former dean of the St. Louis University School of Medicine, was appointed vice chairman of the Armed Forces Medical Policy Council on December 15 to become effective January 1, 1952. Dr. Casberg will serve as the principal assistant to the chairman, Dr. W. Randolph Lovelace. The Council was established in January 1951 to advise the Secretary of Defense on medical and health matters.

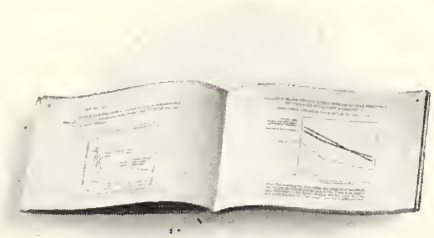
Roland M. Klemme, M.D., St. Louis, will address the General Practitioners Study Club of Greater St.

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Louis on February 20 on "New Methods of Diagnosis in Neurosurgery."

FOURTH COUNCILOR DISTRICT

JOHN O'CONNELL, OVERLAND, COUNCILOR

St. Louis County Medical Society

The St. Louis County Medical Society met on December 12 at the Auditorium of the Health Center, St. Louis County Hospital with fifty-six present. The president, W. H. Bailey, M.D., presided.

The following were presented by the committee on constitution and by-laws for reading and publication:

"Chapter II, Section 13. Attendance. Any member who does not attend at least two regular scientific meetings during the calendar year, shall not be eligible to hold office in the succeeding year, or to vote at the annual election.

"Chapter XI. Section 3. Election. A ballot listing the nominees for president, vice president, secretary, councilors, delegates and alternate delegates for the ensuing year, shall be mailed to each member at least ten days before the December meeting. Said member if eligible to vote, shall mark the ballot and enclose it in an envelope on the outside of which the member shall sign his name. This shall be returned to the secretary who shall check signature with eligible membership roll, and present unopened ballot to the council. The council shall tabulate the ballots and present the results at the December meeting. In case of a tie vote, those present at the December meeting shall decide by ballot the winner."

Announcement was made of the following officers: President, O. P. Hampton, M.D.; vice president, Guy Magness, M.D.; secretary, M. A. Diehr, M.D.; Councilors, William H. Bailey, M.D., J. F. Dowd, M.D., and C. Shepherd, M.D.; delegates, C. P. Dyer, M.D., Julius Jensen, M.D., Martyn Schattyn, M.D., Carl Irick, M.D., J. R. Nakada, M.D., and E. R. Brown, M.D.; alternate delegates, F. L. Finley, M.D., R. Walther, Jr., M.D., E. C. Holscher, M.D., G. E. Jacobs, M.D., John A. Rogers, M.D., A. J. Steiner, M.D., and E. J. Helbing, M.D.

M. A. Diehr, M.D., Secretary

FIFTH COUNCILOR DISTRICT

J. F. JOLLEY, MEXICO, COUNCILOR

SIXTH COUNCILOR DISTRICT

R. W. KENNEDY, MARSHALL, COUNCILOR

SEVENTH COUNCILOR DISTRICT

VICTOR B. BUHLER, KANSAS CITY, COUNCILOR

R. E. Bruner, M.D., Kansas City, presented a paper before the Pediatric Journal Club in Des Moines, Iowa, on December 3 Dr. Bruner addressed the Kansas Occupational Therapy Association at a meeting in Kansas City on December 8.

David Littauer, M.D., Kansas City, was elected president-elect of the Missouri Hospital Association at its annual meeting in St. Louis on December 7.

Ira H. Lockwood, M.D., Kansas City, was elected president-elect of the Radiological Society of North America at a recent meeting in Chicago.

Edward H. Hashinger, M.D., Kansas City, was a guest speaker before the Jackson County Division of the Missouri Association of Social Welfare on December 14 and spoke on "Adequate Care for Our Aging Population From a Doctor's View."

Louis Forman, M.D., Kansas City, has been elected to the medical advisory board of the Western Missouri Chapter of Physical Therapists.

Herbert L. Mantz, M.D., Kansas City, was one of three participants in a national telephone seminar to a meeting of the Indianapolis County Medical Society on December 4. The seminar was broadcast by loud speaker to the auditorium of the Indiana University Medical School and interconnected to some thirty medical societies throughout Indiana.

EIGHTH COUNCILOR DISTRICT

WALTER S. SEWELL, SPRINGFIELD, COUNCILOR

NINTH COUNCILOR DISTRICT

E. C. BOHRER, WEST PLAINS, COUNCILOR

South Central Counties Medical Society

The South Central Counties Medical Society met for dinner at the Arcade Hotel, West Plains, on December 19, with the following members and visitors present: Drs. R. W. Denney, S. W. Connor and A. C. Ames, Mountain Grove; T. J. Burns and S. G. Kramer, Houston; T. R. Skaggs, Mountain View; E. C. Bohrer, Rollin H. Smith and C. F. Callihan, West Plains; J. L. Johnston and R. E. Ferrell, Springfield, and several of the wives.

The meeting was called to order by Dr. Burns in the office of Dr. Smith.

Dr. Johnston spoke on "Prolonged Labor," explaining the causes of unusual delay.

Dr. Ferrell spoke on "Gallbladder Diseases." Thanks of the Society was voted to the speakers.

Election of officers for next year resulted as follows: President, S. W. Connor, Mountain Grove; vice president, S. G. Kramer, Houston; secretary and treasurer, A. C. Ames, Mountain Grove; censors for three years, S. G. Kramer, Houston, for two years, Rollin H. Smith, West Plains, for one year, R. W. Denney, Mountain Grove; delegates and alternates, Howell County, Rollin H. Smith and C. F. Callihan; Texas County, T. J. Burns and Garrett Hogg, Jr.; Oregon County, C. W. Cooper and A. T. Walker; Wright County, R. W. Denney and S. W. Connor; Douglas County, M. C. Gentry and no alternate.

T. R. Skaggs, M.D., Mountain View, was voted a member of the Society.

The meeting adjourned to meet at Houston on January 18.

A. C. Ames, M.D., Secretary.

TENTH COUNCILOR DISTRICT

FRANK W. HALL, CAPE GIRARDEAU, COUNCILOR

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Affton, St. Louis County*
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Altenburg, Perry County
Anderson, McDonald County
Appleton City, St. Clair County
Ash Grove, Greene County
Aurora, Lawrence County
Ava, Douglas County

B

Bakersfield, Ozark County
Ballwin, St. Louis County*
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Barnhart, Jefferson County
Beaufort, Franklin County
Belton, Cass County
Bethany, Harrison County
Birch Tree, Shannon County
Bismarck, St. Francois County
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Bolivar, Polk County
Bonne Terre, St. Francois County
Boonville, Cooper County
Bowling Green, Pike County
Branson, Taney County
Brashear, Adair County
Braymer, Caldwell County
Breckenridge, Caldwell County
Brentwood, St. Louis County*
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Brookline Station, Greene County
Browning, Linn County
Brunswick, Chariton County
Bucklin, Linn County
Buffalo, Dallas County
Burlington Junction, Nodaway County
Butler, Bates County
Bynumville, Chariton County

C

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California, Moniteau County
Camdenton, Camden County
Cameron, Clinton County
Campbell, Dunklin County
Canton, Lewis County
Cape Girardeau, Cape Girardeau County
Cardwell, Dunklin County
Carl Junction, Jasper County
Carrollton, Carroll County
Carthage, Jasper County
Caruthersville, Pemiscot County
Cassville, Barry County
Cedar Hill, Jefferson County
Centerville, Reynolds County
Centralia, Boone County
Chaffee, Scott County
Charleston, Mississippi County
Chesterfield, St. Louis County*
Chillicothe, Livingston County
Clarksville, Pike County
Clayton, St. Louis County*
Clinton, Henry County
Coatsville, Schuyler County
Cole Camp, Benton County
Columbia, Boone County
Conception Junction, Nodaway County
Concordia, Lafayette County
Conway, Laclede County
Cooter, Pemiscot County
Crane, Stone County
Creve Coeur, St. Louis County*
Crocker, Pulaski County
Crystal City, Jefferson County
Cuba, Crawford County

D

Dearborn, Platte County
Delta, Cape Girardeau County
Desloge, St. Francois County
DeSoto, Jefferson County
Dexter, Stoddard County
Diamond, Newton County
Dixon, Pulaski County
Doniphan, Ripley County
Downing, Schuyler County
Drexel, Cass County

E

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Edgerton, Platte County
Edina, Knox County
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El Dorado Springs, Cedar County
Ellington, Reynolds County
Elsberry, Lincoln County
Essex, Stoddard County
Eugene, Cole County
Eureka, St. Louis County*
Excello, Macon County
Excelsior Springs, Clay County

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Farmington, St. Francois County
Fayette, Howard County
Fenton, St. Louis County*
Ferguson, St. Louis County*
Festus, Jefferson County
Fillmore, Andrew County
Flat River, St. Francois County
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Fulton, Callaway County

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Green City, Sullivan County
Greenfield, Dade County
Green Ridge, Pettis County

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Herculaneum, Jefferson County
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Higbee, Randolph County
Higginsville, Lafayette County
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Hopkins, Nodaway County
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Houston, Texas County
Houstonia, Pettis County
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Hume, Bates County
Huntsville, Randolph County

I

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Illmo, Scott County
Independence, Jackson County
Ironton, Iron County

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Kansas City, Jackson County
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Kimmswick, Jefferson County
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Knox City, Knox County
Koch, St. Louis County*

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Ladue, St. Louis County*
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Lamar, Barton County
La Monte, Pettis County
Lancaster, Schuyler County
La Plata, Macon County
Lathrop, Clinton County
Lawson, Ray County
Leadwood, St. Francois County
Leasburg, Crawford County
Lebanon, Laclede County
Lee's Summit, Jackson County
Lemay, St. Louis County*
Lexington, Lafayette County
Liberty, Clay County
Licking, Texas County
Lilbourn, New Madrid County
Lockwood, Dade County
Louisiana, Pike County

M

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Macon, Macon County
Malden, Dunklin County
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Mansfield, Wright County
Maplewood, St. Louis County*
Marceline, Linn County
Marionville, Lawrence County
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Marston, New Madrid County
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Maryville, Nodaway County
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New Florence, Montgomery County
New Franklin, Howard County
New Haven, Franklin County
New Madrid, New Madrid County
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Oak Grove, Jackson County
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Oran, Scott County
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Pickering, Nodaway County
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Reeds Spring, Stone County
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Richland, Pulaski County
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Rock Hill, St. Louis County*
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Senath, Dunklin County
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Shelbyville, Shelby County
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Sikeston, Scott County
Silex, Lincoln County
Slater, Saline County
Smithton, Pettis County
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Stockton, Cedar County
Stoutland, Camden County
Strafford, Greene County
Strasburg, Cass County
Sturgeon, Boone County
Sullivan, Franklin County
Sumner, Chariton County
Sweet Springs, Saline County

T

Tarkio, Atchison County
Thayer, Oregon County
Tina, Carroll County
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Trenton, Grundy County
Troy, Lincoln County

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Winona, Shannon County
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* May belong to St. Louis County or to St. Louis Medical Society.

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Barnett, Gordon P., Kansas City
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Barry, William B., Kansas City
Barrymore, Eugene, Bowling Green

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Bartlett, Willard, St. Louis
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(Member St. Louis Medical Society)
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(Member St. Louis Medical Society)
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Bauer, Robert A., St. Louis
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Bauman, Henry C., Maryville
Baumgarten, Walter, Jr., St. Louis
Bawell, Malcolm B., St. Louis
Bay, Merrill R., Blue Springs
Baysinger, S. L., Rolla
Beall, Homer, Malden
Beam, Sim F., Brentwood
Beare, J. Byron, St. Louis
Beasley, L. Kenneth, St. Louis
Beattie, W. R., Springfield
Beatty, Arch J., Kansas City
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Becke, William G., St. Louis
Beckemeyer, W. Albert, Sedalia
Becker, Edward J., St. Louis
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(Member St. Louis Medical Society)
Becker, Richard R., Kansas City
Beckett, Theodore C., Boonville
Beckette, Edmund S., St. Louis
Beckham, Genevieve S., St. Louis
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Beem, John R., St. Louis
Beers, Ellsworth G., Seymour
Beers, Robert G., Webster Groves
Behan, Lawrence G., Topeka, Kan.
(Member St. Charles County)
Behrens, Donald T., St. Louis
Beil, J. Wallace, Kansas City
Beisbarth, Albert, St. Louis
Beisbarth, Carl C., St. Louis
Belaval, Gustavo S., Kansas City
Belden, Edgar A., Jefferson City
Bell, Charles T., Maryville
Bell, Exter F., address unknown
(Member Dunklin County)
Bell, J. Vardiman, Kansas City
Bell, John M., St. Joseph
Bell, Robert M., St. Louis
Belsey, Wallace A., Campbell
Benincasa, Anthony V., St. Louis
Benjamin, Durand, St. Louis
Bennett, C. Edward, Webster Groves
Bennett, James D., Kansas City
Bennett, Joseph S., Independence
Benson, Scott C., St. Joseph
Benzing, William, Jr., Mission, Kansas
Berard, Louis N., St. Louis
Berg, Ralph, St. Louis
Berg, Ralph, Jr., Spokane, Wash.
(Member St. Louis Medical Society)
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Berger, Edward J., St. Louis
Bergman, Hugo F., St. Louis
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Berman, William, St. Louis
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Bickel, Vern T., Lamar
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Bierman, Max John, Clayton
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Biggs, Harry L., Raytown
Biggs, James Brown, Bowling Green
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Birsner, Frank H., Carthage
Birsner, Louis J., St. Louis
Bishop, William T., Sedaila
Bisno, Daniel, St. Louis
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Black, Donald R., Kansas City
Black, Eugene C., Kansas City
Black, James M., St. Louis
Black, Mervin H., Joplin
Black, William D., St. Louis
Blacklock, David E., King City
Blackman, Nathan, Kirkwood
Blackmore, Thomas A., Windsor
Blair, Vilray P., Florissant
Blair, Vilray P., Jr., St. Louis
Bland, Warren W., Vandalia
Blanke, Otto T., Joplin
Blankenship, George W., Anderson
Blasko, John J., Gulfport, Miss.
(Member Callaway County)
Blaylock, Richard D., Oak Ridge
Bleyer, Adrien S., St. Louis
Block, Arnold S., St. Louis
Bloom, W. A., Fayette
Bloomer, Gaylord T., St. Joseph
Bloomer, Joseph Arnold, Maryville
Blumenschein, J. C., Independence
Bock, L. H., St. Louis
Bockelman, Clifford H., Columbus, Miss.
(Member St. Louis Medical Society)
Boedeker, Roy V., St. Louis
Boemer, Lilburn C., St. Louis
Boger, J. W., Sedalia
Bohan, Peter T., Kansas City
Bohne, William R., St. Louis
Bohnsack, Ralph W., Brookfield
Bohrer, Harry C., St. Louis
Bohrer, Edward R., Jefferson City
Bohrer, E. Claude, West Plains
Boldizar, Albert G., St. Louis
Boldt, Thomas, St. Louis
Boles, Clifford R., Clayton
Boley, James O., Kansas City
Bolgar, Bartholomew, Festus
Bond, Francis G., Poplar Bluff
Bond, Van H., Hornersville
Bondurant, Bryce G., Kirkwood
Boody, Robert James, Kansas City
Booth, Herbert Redcliff, Hamilton
Boots, Roger H., Springfield
Border, Charles T., Kansas City
Borenstine, Joseph, Kansas City
Bortnick, Arthur R., St. Louis
Boteler, George McCrary, Nevada
Boughnou, Harvey P., Kansas City
Bourke, Timothy S., Kansas City
Boutros, Amin, Kansas City
Bowdern, Edward H., St. Louis
Bowerman, Harold H., St. Louis
Bowersox, Warren A., St. Louis
Bowman, M. C., Neosho
Bowser, John F., Kansas City
Box, Ernest M., Springfield
Boyd, Arthur M., St. Louis
Bozzo, Raymond John, Washington
Bradford, Oscar F., Columbia
Bradley, Frank R., St. Louis
Brady, Charles H., Sedalia
Brady, Hugh S., Concordia
Bragdon, George H., Reeds
Brainard, Benjamin F., Martin City
Brams, Jack Bernard, Kansas City
Brand, Earl Leroy, Webster Groves
Brandon, John P., Essex
Brandon, W. L., Poplar Bluff
Brasher, Ben H., Lexington
Brasher, Charles A., Mt. Vernon
Bredall, Jerome Julian, Perryville
Breid, Jacob, Spickard
Bremser, Harry L., St. Louis
Brennan, John A., Farmington
Brennan, Raymond J., Chillicothe
Brennan, Robert A., St. Louis
Brennan, Robert V., St. Louis
Brenner, Paul A., Owensville
Breuer, R. E., Newburg
Brewer, Lake, Ridgeway
Bricker, Eugene M., St. Louis
Bridges, James R., Kahoka
Briegleb, Charles F., St. Clair
Briscoe, John R., Maplewood
Bristow, Arthur Shaw, Princeton
Bristow, George B., Princeton
Bristow, Robert B., Princeton
Britt, Robert E., St. Louis
Brockelmann, Emmy M., St. Louis
Brockelmann, Erich, St. Louis
Brodeur, Armand E., St. Louis
Broeder, William H., St. Louis
Bromberg, Leon, St. Louis
Brooker, R. M., Kansas City, Kansas
(Member Buchanan County)
Brookes, Henry Spence, Jr., St. Louis
Brookes, Robert D., St. Louis
Brookreson, Alton F., Poplar Bluff
Brooks, Arthur C., St. Louis
Brooks, Clifton R., St. Louis
Brooks, John Medford, Diamond
Brossard, Pierre M., Maplewood
Broun, Goronwy O., St. Louis
Brown, Adrian J., Kansas City
Brown, Arthur C. F., Richmond Heights
Brown, Clyde O., St. Louis
Brown, E. Eugene, St. Louis
Brown, E. R., University City
Brown, Irvin S., Kansas City
Brown, James Barrett, St. Louis
Brown, John E., Perry
Brown, John J., Fulton
Brown, Lyman D., Springfield
Brown, Robert S., Kansas City
Brown, Seymour, St. Louis
Brown, William Russell, Pleasant Hill
Brown, William Sidney, St. Louis
Brown, Wilson G., Houston 5, Texas
(Member St. Louis County)
Brownfield, Samuel T., Brookfield
Broyles, Glen H., Kansas City
Broyles, Watkins A., Bethany
Bruce, Helen L., St. Louis
Bruce, James G., Jefferson City
Brumm, Harold J., St. Joseph
Brumm, Lawrence W., Kansas City
Bruner, Claude R., Columbia
Bruner, Robert E., Kansas City
Brust, Carl H., Mission, Kansas
(Member Jackson County)
Bruton, Tyrrel S., Springfield
Bryan, James H., St. Louis
Bryan, Theodore L., Camp Atterbury, Indiana
Bryan, William T. K., St. Louis
(Member St. Louis Medical Society)
Bublis, Mary D., Temple, Texas
(Member St. Louis Medical Society)
Bublis, Norbert J., St. Louis
Buck, Ronald, St. Joseph
Buck, Ulysses Grant, Rothville
Buckingham, William, Kansas City
Buckner, Robert C., Kansas City
Buckthorpe, Thelma C., Waynesville
Buddy, Edward P., St. Louis
Budke, Harold A., Kansas City
Budke, Robert J., St. Charles
Buehler, Carl T., Jr., Eldon
Buehrer, Cletus E., Lawson
Bugg, Andrew F., Ellington
Buhler, Victor B., Kansas City
Bukantz, Sam C., Webster Groves
Bulger, Harold A., St. Louis
Bull, Ben M., Ironton
Bumgarner, James E., Higginsville
Bunch, James R., Nevada
Bunten, Joseph Cook, Branson
Bunting, Williston P., Kansas City
Burch, John E., Joplin
Burford, Cyrus E., St. Louis
Burford, E. Humber, St. Louis
Burford, Thomas H., Clayton
Burke, J. P., Jr., California
Burke, Walter H., Springfield
Burney, Wallace S., Miller
Burns, Beryl I., Kansas City
Burns, Francis R., St. Louis
Burns, Francis J., St. Louis
Burns, Jonathan E., Charles Town, W. Va.
(Member Jackson County)
Burns, Stanley S., St. Louis
Burns, Stanley S., Jr., Bremerton, Wash.
(Member St. Louis Medical Society)
Burns, Thomas J., Houston
Burst, Donald O., St. Louis
Burst, Emil A., St. Louis
Busch, Anthony K., St. Louis
Busiek, Paul J., Springfield
Busiek, Urban J., Springfield
Bussmann, Donald W., Clayton
Butcher, Harvey R., Jr., St. Louis
Butler, E. F., Carrollton
Butterworth, Nelson S., Joplin
Butts, James D., St. James

Buvinger, W. J., Jr., Jefferson City
Byars, Louis T., St. Louis
Byers, Philip L., Kansas City
Byland, Benjamin F., Maryville
Byland, Samuel J., Wellsville
Byrd, Homer E., Carthage
Byrne, John E., St. Louis
Byrne, John I., St. Joseph
Byrns, Robert E., St. Louis

C

Cadwell, Paul M., St. Louis
Cain, Alvin R., Lamar
Cain, Arthur S., Jr., Kansas City
Cain, Charles F., Caruthersville
Caldwell, James C., Fulton
Caldwell, John K., Kansas City
Calkins, Delevan, St. Louis
Callaway, G. D., Springfield
Callaway, Luther M., Kansas City
Callihan, C. F., West Plains
Calvert, Lewis C., Weston
Cameron, Solon, St. Louis
Campbell, Albert J., Sedalia
Campbell, Cecil S., St. Louis
Campbell, Edward D., Cape Girardeau
Campbell, Frederick B., Kansas City
Campbell, James Edwin, Macon
Campbell, William S., Albany
Campos, Francisco J., St. Louis
Canella, John M., Hannibal
Canepa, Francis J., St. Louis
Canepa, John B., St. Louis
Canlas, Emilo M., Poplar Bluff
Cannady, J. E., Sedalia
Cannon, Edward M., St. Louis
Cantry, Eugene J., St. Louis
Canty, Eugene J., St. Charles
Capell, Clarence S., Kansas City
Capetti, Alex P., Aurora
Cappel, Powel B., St. Louis
Caravelli, Anthony F., St. Louis
Carbaugh, Glenn C., Kansas City
Cardwell, Clarence, Stella
Carle, H. W., Jr., St. Joseph
Carlisle, John B., Sedalia
Carlson, Hjalmar E., Kansas City
Carlton, Charles E., Stoutland
Carmichael, F. A., Kansas City
Carmichael, Francis A., Jr., Kansas City
Carney, Joseph E., Jr., St. Louis
Carpenter, George T., St. Joseph
Carpenter, George W., Chillicothe
Carr, A. D., St. Louis
Carrier, Edson C., Kansas City
Carrier, John A., Affton
Carrington, Howard W., Lebanon
Carroll, George A., St. Louis
Carroll, Grayson, St. Louis
Carron, Oscar A., Perryville
Carter, Harvey W., Portageville
Carter, James R., Neosho
Carter, William W., Knoxville, Tenn. (Member St. Louis Medical Society)
Casberg, Melvin A., St. Louis
Casebolt, Milton B., Kansas City
Casey, Edwin J., St. Louis
Casey, Shederic A., Lebanon
Casford, Ralph S., Kansas City
Cason, Elbert H., St. Louis
Cassel, Melvin A., St. Louis
Cassidy, Leslie D., St. Louis
Castelaw, Rush E., Kansas City
Castles, Charles C., Caruthersville
Castles, John E., Kansas City
Catanzaro, Anthony F., St. Louis
Cavaness, Ernest W., Leucadia, Calif. (Member Jackson County)
Cavender, Savino W., address unknown (Member St. Louis Medical Society)
Chalkley, Judson I., Boonville
Chamberlain, Gilbert L., New Franklin
Chambers, James Q., Jr., Kansas City
Chandler, Orville B., New Madrid
Chapman, Arthur H., Cape May, N. J. (Member St. Louis Medical Society)
Chapman, J. R., Steele
Chapman, Samuel B., Kansas City
Charles, Benjamin H., St. Louis
Charles, Cecil M., St. Louis
Charnas, Raymond M., St. Louis
Chastain, Maurice W., Smithville
Cheeseman, William B., Kansas City
Cherre, Charles J., Norfolk, Virginia (Member St. Louis Medical Society)
Chiarottino, Joseph F., St. Joseph
Chiasson, E. Chaille, Columbia
Chilton, James C., Hannibal
Chopin, George F., St. Louis
Chute, W. Deward, Moberly
Ciapciak, Stanley J., St. Louis
Claiborne, Edward G., Camdenton
Clancy, James F., St. Louis
Clapsaddle, Clare J., Ste. Genevieve
Claridge, Ralph A., St. Louis
Clark, Clarence L., Duluth, Minn. (Member St. Louis Medical Society)
Clark, Chester Lee, Trenton
Clark, Harold B., Kansas City
Clark, James F., St. Louis
Clasen, Arthur C., Kansas City
Clay, Calvin, St. Charles
Clay, Hampson S., Poplar Bluff
Cleary, Frank, St. Louis
Cleveland, Horace F., Long Beach, Calif. (Member St. Louis Medical Society)
Cline, Edward W., Boonville
Cline, Harold H., Piedmont
Cline, Jesse A., Oran
Clinton, Lloyd B., Carthage
Clithero, W. H., St. Louis
Coates, Charles C., Joplin
Coates, Thomas A., St. Louis
Coburn, Donald F., Kansas City
Cochran, J. H., Cape Girardeau
Cochrane, Joseph J., Kansas City
Cockerell, Sanford F., Independence
Cofer, James C., Kennett
Coffelt, Kenneth C., Springfield
Coffey, Ralph Ringo, Kansas City
Coffin, Ernest L., Portage, Maine (Member St. Louis Medical Society)
Coffin, Helen Kingsbury, Kansas City
Coffin, Theodore A., Kansas City
Coffman, Esther E. L., St. Louis
Cohen, Frank, St. Louis
Cohen, Harry K., Kansas City
Cohen, Hilliard, Kansas City
Cohen, Louis, St. Louis
Cohle, Richard R., University City
Cohnberg, Rosellen Elaine, Monett
Cohrs, Clarence C., Moberly
Coil, Paul E., Mexico
Colby, Buford M., Hale
Coldwater, Kenneth B., Jefferson Barracks
Coleman, William G., St. Louis
Colgate, Cleon E., Amarillo, Texas (Member St. Louis County)
Coller, Frederick C., Springfield (Member St. Louis Medical Society)
Collier, Alfred, Chillicothe
Collins, John M., Webster Groves
Comboy, Lawrence J., Independence
Commerford, James J., Crystal City
Compton, James Roy, St. Louis
Cone, Alfred J., Chesterfield
Conley, Dudley Steele, Columbia
Connell, Evan S., Kansas City
Connor, John J. St. Louis
Connor, Samuel W., Mountain Grove
Conover, Charles C., Kansas City
Conrad, Adolph H., St. Louis
Conrad, Adolph H., Jr., St. Louis
Conrad, Joseph A., Chillicothe
Conrad, Marshall B., St. Louis
Conrad, Raymond C., Springfield
Conrad, Robert W., St. Joseph
Conway, Francis, St. Louis
Cook, James T., St. Louis
Cook, Jerome E., St. Louis
Cook, O. W., Caruthersville
Cook, Ralph L., University City
Cook, Robert J., Brentwood
Cooke, Jean V., St. Louis
Coombs, Miller O., Joplin
Cooper, Claude W., Thayer
Cooper, Henry T., St. Louis
Cooper, John H., Kansas City
Cooper, John M., Butler
Cooper, Lawrence E., Cooter
Cooper, Maurice E., Columbia
Cooper, R. Lee, Warrensburg
Cope, James C., Columbia
Cope, Joseph S., Kansas City
Copher, Glover H., St. Louis
Cordonnier, Justin, St. Louis
Cornell, John C., St. Louis
Correnti, Nicholas A., St. Louis
Cortner, Mary C., Kansas City
Cory, Harriet S., St. Louis
Cossins, Carlos E., St. Joseph
Costa, Dominic V., St. Louis
Costello, Cyril J., St. Louis
Costello, Joseph P., St. Louis
Costello, Joseph P., Jr., St. Louis
Costen, James B., St. Louis
Costrino, Joseph A., St. Louis
Cotton, Tolman W., Van Buren
Cottrell, Wilson P., Reeds Spring
Counsell, Chester M., Kansas City
Cowan, R. D., Aurora
Cowan, Watt O., Greenfield
Cowherd, Joseph B., Kansas City
Cox, DeWitte W., St. Louis
Cox, Kenneth E., Kansas City
Cox, William A., Jefferson City
Craig, Arthur D., Springfield
Craig, Irwin T., Joplin
Craig, Owen W. D., St. Joseph
Craig, W. E., Moberly
Cramb, Arthur B., Spoffard, N. H. (Member North Central Counties)
Cramer, Quentin, Kansas City
Craven, Young D., Long Beach, Calif. (Member Clay County)
Crawford, Archie L., Joplin
Crawford, Katherine J., St. Louis
Crawford, Oral B., Springfield
Creane, John C., St. Louis
Creech, Joseph C., Troy
Crego, Clarence H., Jr., St. Louis
Cremer, William J., Fulton
Cresswell, George F., Potosi
Crews, Robert N., Fulton
Crider, Russell J., St. Charles
Critchlow, William C., Sikeston
Crites, Edward, Sedgewickville
Crossen, Robert J., St. Louis
Crossman, Robert Wesley, Webster Groves
Crotty, Richard Q., St. Louis
Crouch, F. Richard, Farmington
Crouch, Richard L., Maywood, Ill. (Member Boone County)
Crowe, John T., Cape Girardeau
Culbertson, William F., Springfield
Cullers, Charles H., Trenton
Cummins, Walter F., Kansas City
Cummings, James H., St. Louis
Cunningham, Eric Alton, Louisiana
Cunningham, Harvey L., Cape Girardeau
Curl, Howard, Joplin
Curran, Edward J., Kansas City
Curran, Kevin E., Kansas City
Curran, M. Desmond, Kansas City
Cutler, Harold M., St. Louis
Cutler, Harry, St. Louis
Czebrinski, Edward W., St. Louis

D

Daake, John W., St. Louis
Dahms, Gustave, St. Louis
Daley, Frank R., Hamilton
Dalton, Arthur R., St. Louis
Daly, John R., St. Louis
Daman, George A., St. Louis
Damron, E. O., Elsberry
Damron, Oscar H., Warrensburg
Danglade, James H., Kansas City
Danis, Peter G., St. Louis
Dann, David S., Kansas City
Davault, Webster W., Delta
Davidson, Morris, Clayton
Davie, Joseph, St. Louis
Davis, C. B., Nevada
Davis, Edgar W., St. Louis
Davis, Frank L., St. Louis
Davis, Harry H., Rolla
Davis, Herbert V., Kansas City
Davis, Irl R., St. Louis
Davis, Jack M., Raytown
Davis, John J., Kansas City
Davis, Kenneth A., Kansas City
Davis, Landis Y., Canton
Davis, Martin W., Webster Groves
Davis, Myron W., St. Louis
Davis, Paul C., Neosho
Davis, Robert C., Kansas City
Davis, Robert I., Birch Tree
Davis, Thomas M., St. Louis
Davis, Wilbur L., Charleston
Dawson, Lerton V., Excelsior Springs
Dawson, Orville L., St. Louis
Day, Anthony B., St. Louis
Day, Maxwell, Nashville, Tenn. (Member Buchanan County)
Deakin, Rogers, St. Louis
Dean, Francis D., Fayette
Dean, Lee Wallace, Jr., St. Louis
Dean, Leslie E., Maryville
DeLamater, Hasbrouck, St. Joseph
de la Torre, John J., Sullivan
Delzell, William A., Springfield
DeMaria, Peter F., Kansas City
Demko, Frank, St. Louis
Demko, William, St. Louis
DeMott, Jack D., Kansas City
DeMotte, John Allen, Kansas City

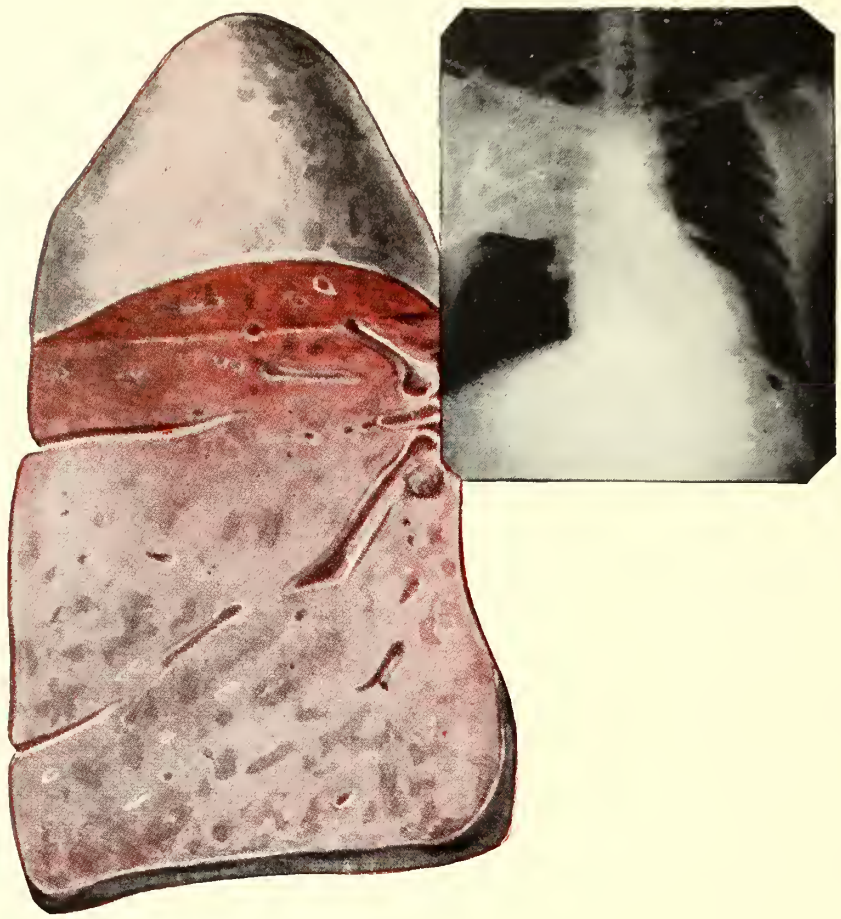
Dempsey, D. T., Kennett
Denk, Albert A., St. Louis
Denney, Richard W., Mountain Grove
Dennie, Charles C., Kansas City
Denny, Chester H., Creve Coeur
Denny, H. M., Union
Denny, Robert B., University City
Denton, Levi D., Hayti
DePew, Heber B., St. Louis
Deppe, Arthur H., St. Louis
Dernoncourt, John E., Charleston
DeTar, Burleigh Eli, Joplin
DeTar, B. E., Jr., Joplin
Deutch, Max, St. Louis
Devine, John B., St. Louis
Deweese, Everett R., Kansas City
Dickson, Frank D., Kansas City
Dickson, James A., St. Louis
Dieckman, William C., Dexter
Diehr, Alvin H., St. Louis
Diehr, M. A., St. Louis
Diekroeger, M. L., Boonville
Dietrich, Karl D., Columbia
Dietz, M. Wendell, Springfield
DiLeo, Senatro W., St. Louis
Dill, Foster A., Maplewood
Dillion, William G., Salem
Dills, Joseph N., Springfield
Dimond, Edgar A., Kansas City
Dinelli, Frank E., Poplar Bluff
Diveley, Rexford L., Kansas City
Dixon, Charles H., Moberly
Dixon, John Rex, Brookfield
Dixon, O. Jason, Kansas City
Dixon, Vewiser L., Kansas City
Dlabal, Luke J., Independence
Dmytryk, Eugene T., St. Louis
Doan, Deborah, Bakersfield
Dobbins, Thomas, Hillsboro
Dodge, Mark, Kansas City
Domke, Herbert R., Clayton
Donaldson, J. Earle, Kansas City
Donley, Leo F., Jr., St. Louis
Donley, Robert R., Monett
Donnell, Harold E., DeSoto
Donnell, Robert H., Crystal City
Donnell, Thomas A., DeSoto
Dorris, George T., Illmo
Dorris, Richard P., Jefferson City
Dorsch, Ervin H., Independence
Dorsett, E. Lee, St. Louis
Doubek, John C., St. Louis
Doubek, John C., Jr., Steelville
Douglas, John W., Joplin
Douglas, Thomas H., Jr., Osceola
Douglass, D. D., Joplin
Douglass, J. E., Webb City
Dowd, James F., Jr., University City
Dowell, Donald M., Chillicothe
Dowell, Horace S., Chillicothe
Downey, James W., Kansas City
Doyle, Charles R., St. Louis
Doyle, Joseph, St. Louis
(Member Saline County)
Doyle, Raymond E., St. Louis
Drace, Charles C., St. Louis
Drace, Charles C., Jr., St. Louis
Drace, James J., Cape Girardeau
Drake, Avery A., Rolla
Drake, Truman G., Kansas City
Draney, Thomas E., Kansas City
Draney, Thomas L., Kansas City
Drescher, Emmett R., St. Louis
Drews, Leslie C., St. Louis
Drey, Norman W., St. Louis
Dreyer, Carl J., St. Louis
Dreyer, Philip V., Huntsville
Dripps, Roy C., St. Louis
Drisko, Robert M., Kansas City
Drum, Clarence G., St. Louis
Drum, Helen M. Aff, Clayton
Duckett, Claude E., Lamar
Duckworth, William H., St. Clair
Duden, Charles W., St. Louis
Duemler, John H., St. Louis
Duemler, Thomas B., Seneca
Duer, Mildred C., Kansas City
Duffy, Edgar A., Trenton
Duffy, Oliver F., Trenton
Dugay, Harry W., Kansas City
Duggan, John J., Jr., St. Louis
Dulick, Michael, Brentwood
DuMont, Clement C., St. Joseph
Dunaway, Howard A., Sikeston
Duncan, Ralph E., Kansas City
Duncan, Robert D., Springfield
Duncan, William H., Kansas City
Dunham, R. H., North Kansas City
Dunmore, George O., Kennett
Durham, Silas L., Dearborn
Durm, Thomas I., Cassville
Durst, Henry, Fulton
Dworkin, Saul, St. Louis
Dwyer, Frank X., Kansas City
Dwyer, Hugh L., Kansas City
Dwyer, Reinhardt, N. Kansas City
Dwyer, Thomas L., Mexico
Dyer, Clyde P., St. Louis
Dyer, Dallas J., St. Louis
Dyer, David P., Sedalia
Dyer, John H., Warrenton

E

Eades, Dee W., St. Louis
Earp, Ralph K., St. Louis
Eastwood, Douglas W., St. Louis
Eber, Carl T., St. Louis
Eberle, John P., St. Louis
Eberle, Vincent L., St. Louis
Echterhoff, Harry R., St. Louis
Eck, Birkle, St. Louis
Eck, Peter A., St. Louis
Ecker, Decider, Pacific
Eckert, Charles L., St. Louis
Eckert, Clarence T., St. Louis
Ecklund, A. M., Great Lakes, Ill.
(Member St. Louis Medical Society)
Ector, Henry J., Mexico
Edde, Clifford G., Kansas City
Edele, Eugene H., St. Louis
Edmonds, Devilla D., Kansas City
Edgerton, Winfield D., c/o Fleet P. O., N. Y.
(Member St. Louis Medical Society)
Edmondson, Paul J., Centralia
Edmundson, J. Phil, Kansas City
Edwards, D. R., Sedalia
Edwards, Edwin D., Dallas 9, Texas
(Member St. Louis Medical Society)
Edwards, Joseph C., St. Louis
Edwards, T. Burton, Cedar Hill
Edwards, Theodore F., North Kansas City
Efron, Joseph, Rock Hill
Eggleston, D. E., Macon
Egley, Loren E., Kirkwood
Eidelman, Jack R., St. Louis
Eidmann, Walter P., St. Louis
Eigel, Edwin G., St. Louis
Eimer, Chas. E., St. Louis
Eisele, Vincent G., E. St. Louis, Ill.
(Member St. Louis Medical Society)
Eisele, William M., St. Louis
Eiseman, Ben, St. Louis
Eisenmann, Benjamin P., New Haven
Eisenstein, Albert B., Clayton
Eklund, Alfred W., Pleasant Hill
Elders, Frank A., Jr., Cuba
Eldridge, Charles J., Kansas City
Eliscu, Fred, St. Joseph
Eliscu, Juliette, Joplin
Elkins, Ronald F., Springfield
Ellersieck, Dorothy M., St. Louis
Ellery, William L., LaGrange
Ellett, William H., Appleton City
Elliott, B. Landis, Kansas City
Elliott, Gladden V., St. Louis
Elliott, James R., Kansas City
Elliott, John R., St. Joseph
Elliott, Raymond G., Kansas City
Ellis, Burnett E., Gideon
Ellis, Calvin C., University City
Ellis, Colburn H., Garden City
Ellis, Francis J., Springfield
Ellis, Ralph V., Poplar Bluff
Ellis, Sam T., Hannibal
Ellis, Wm. W., Marceline
Ellison, Leroy E., Maplewood
Elman, Robert, St. Louis
Elmer, Warren P., St. Louis
Elrod, Dennis B., Cape Girardeau
Elson, Julius, Ladue
Elston, George B., Kansas City
Emerson, Reynolds L., St. Louis
Emery, Edgar V. N., St. Louis
Emmert, Fred, St. Louis
Engel, Lawrence P., Kansas City
English, Milton T., Jr., Kirksville
English, Wallace D., Cardwell
Engman, Martin L., St. Louis
Engman, Martin F., St. Louis
Enloe, Lawrence D., Jefferson City
Enna, Carl, Kansas City
Epp, George J., St. Louis
Epperly, R. G., Huntsville
Epps, Curtis, Springfield
Erlanger, Herman, St. Louis
Erlanger, Joseph, St. Louis
Erni, Harry E., Macon
Ernst, Edwin C., St. Louis
Ernst, Edwin C., Jr., St. Louis
Ernst, Roland P., Rochester, Minn.
(Member St. Louis Medical Society)
Esch, John G., Republic
Eskeles, Irwin H., St. Louis
Esker, George, St. Louis
Esslinger, Arthur T., St. Louis
Estes, Albert M., Cape Girardeau
Etheredge, Maude Lee, Columbia
Eto, Jackson, St. Louis
Etzenhouser, Russell D., Jr., Independence
Eubank, A. E., Independence
Eubank, Dillard M., Raytown
Eubank, William R., Kansas City
Evans, Albert L., Bonne Terre
Evans, E. J. E., St. Louis
Evans, Emery E., St. Louis
Evans, Ezra L., Springfield
Evans, Ezra L., Jr., Springfield
Evans, Fred L., St. Louis
Evans, Harry T., Branson
Everist, Guy W., Rolla
Eversoll, Norton J., St. Louis
Eyermann, Charles H., St. Louis
Eyermann, H. Walter, Warrenton
(Member Franklin County)

F

Falk, Oswald P. J., Clayton
Fallet, C. E., DeSoto
Farley, Claude C., Kansas City
Farley, William M., St. Louis
Farney, Jacob P., Kansas City
Farnsworth, Jesse J., Kansas City
Farrar, C. B., Flat River
Farrar, John T., Boston, Mass.
(Member St. Louis Medical Society)
Farrell, Robert J., St. Louis
Farris, H. G., St. Louis
Farris, William W., St. Louis
Farthing, Fred R., Springfield
Farthing, Gene W., Springfield
Farthing, Robert R., Ozark
Feierabend, Frank L., Kansas City
Feind, Earl E., Rolla
Feinstein, Leon A., St. Louis
Feist, George V., Kansas City
Feldman, David, St. Louis
Feller, C. E., Springfield
Feller, Harold H., St. Louis
Fellhauer, Carl M., St. Louis
Fellows, William W., Albany, N. Y.
(Member Chariton County)
Feltz, L. W., Perryville
Ferguson, Eugene H., Kansas City
Ferguson, James T., Kansas City
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Potterfield, T. G., and Starkweather, G. A.: J. Philadelphia General Hosp. 2:6 (Jan.) 1951

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Jost, William E., St. Louis
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Juden, Alexandar G., Cape Girardeau
Judy, Joseph D., Ferguson
Jungk, Carl G. W., St. Louis

K

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Kallenbach, G. P., Mexico
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Kanagowa, H., Jefferson City
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Kane, R. Emmet, St. Louis
Kantor, Julius M., Kansas City
Kantor, Samuel, Kansas City
Kapesser, Netajean B., St. Louis
Kaplan, Albert, St. Louis
Karl, Michael M., St. Louis
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frozen

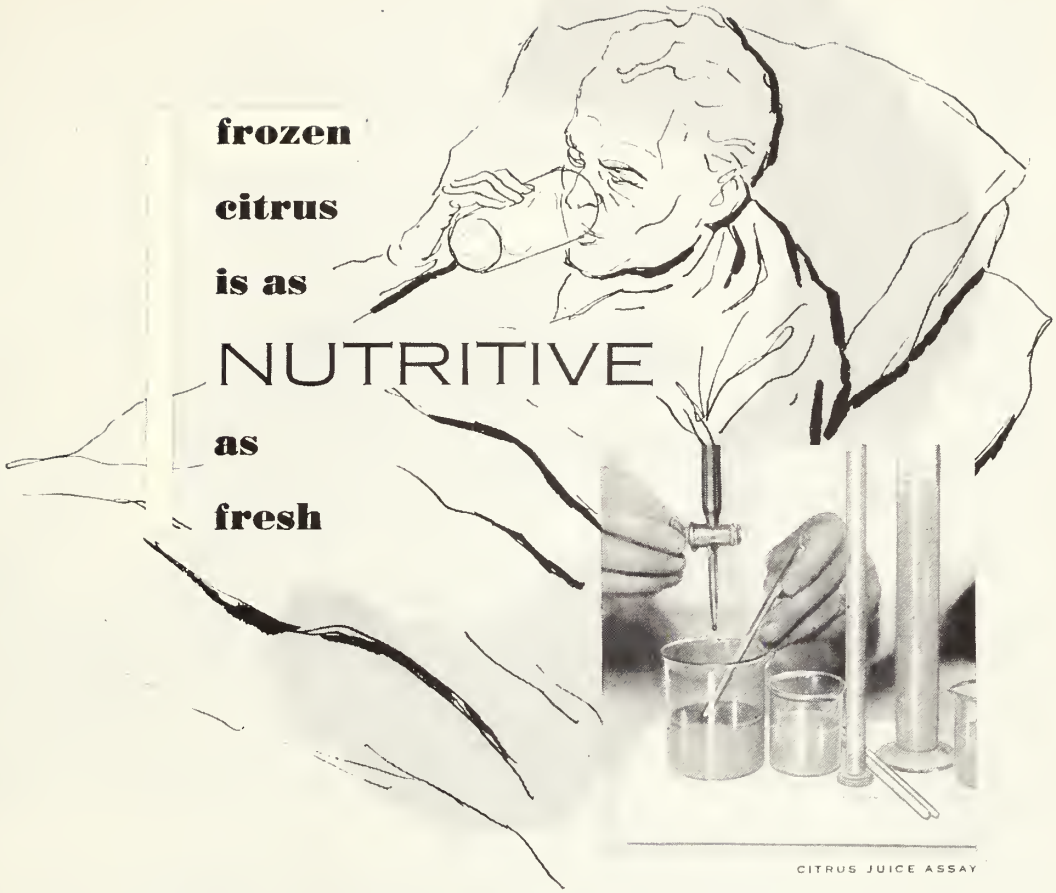
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as

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CITRUS JUICE ASSAY

Long welcomed in home and institutional kitchens for its convenience, economy and flavor—*frozen* citrus is now acknowledged the "nutritive equal" of fresh. The Council on Foods and Nutrition of the American Medical Association has declared* that—under modern processing methods—approximately 98 percent of the vitamin C content can be retained in the frozen concentrated juice. And, when properly stored (below its freezing point), there is practically no loss of vitamin C. Frozen citrus can thus be confidently recommended for diets at all ages, including infancy.

**J.A.M.A. 146:35, 1951.*

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McAdam, James D., Prairie Hill
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M

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Moragues, Vicente, St. Louis
Morest, F. Stanley, Kansas City
Morfit, John C., St. Louis
Morgan, David B., Kansas City
Morrin, Kevin, St. Louis
Morris, Harvey E., St. Louis
Morris, Mary E., St. Louis
Morrow, Raymond L., Kansas City
Morroway, James H., St. Joseph
Morse, Frank L., St. Louis
Morse, Marvin, St. Joseph
Morton, Paul C., Springfield
Mosco, James A., St. Louis
Moskop, Peter G., St. Louis
Moss, Paul, Kansas City
Moss, William T., Columbia
Motley, Elliot R., Kinderhook, Ill.
(Member Marion-Ralls County)
Mott, James R., Hartville
Motzel, Albert J., St. Louis
Mountjoy, Grace S., St. Louis
Mowrey, William O., St. Louis
Muckerman, Richard I. C., St. Louis
Mudd, J. Gerald, St. Louis
Mudd, James L., St. Louis
Mueller, Charles B., St. Louis
Mueller, Clarence E., St. Louis
Mueller, Joseph A., St. Louis
Mueller, Martin J., Kansas City
Mueller, Morris A., Ladue
Mueller, Ralph E., Kansas City
Mueller, Robert, St. Louis
Mueller, Robert J., St. Louis
Mueller, W. K., St. Louis
Muench, Albert H., St. Joseph
Muench, Ludwig O., Washington
Muenster, Joseph J., University City
Muether, Raymond O., St. Louis
Mullarky, Wilbur A., St. Louis
Mullen, Leo M., Kansas City
Mulligan, Leo V., St. Louis
Mullinax, Orr, St. Joseph
Mullins, Bernard L., N. Kansas City
Mundy, H. F., St. Joseph
Mundy, William L., Kansas City
Munsch, Augustin P., St. Louis
Munsch, Girard A., St. Louis
Murphy, Bernard D., Hannibal
Murphy, Frank V., Marion, Ohio
(Member St. Louis County)
Murphy, James Patrick, St. Louis
Murphy, Jerome P., Mission, Kan.
(Member Jackson County)
Murphy, John C., St. Louis
Murphy, John P., St. Louis
Murphy, John Patrick, Jr., St. Louis
Murphy, Paul, St. Louis
Murphy, Robert J., Kansas City
Murray, John W., Sedalia
Murray, Lotis V., Pleasant Hill
Murray, Louis F., St. Louis
Musgrave, David E., Excelsior Springs
Musgrave, Paul W., Clinton
Musick, James D., Springfield
Musser, Richard E., Waynesville
Mutshnick, Clara P., St. Louis
Myers, E. Lee, St. Louis
Myers, George T., Macks Creek
Myers, James M., Rolla
Myers, John I., Kansas City
Myers, John S., Kansas City
Myers, Ralph R., Bremerton, Wash.
(Member Jackson County)
Myers, Robert M., Kansas City
Myers, Roy E., Joplin
Myers, Wilson A., Kansas City

N

Nakada, James R., St. Louis
Napper, Marvin L., Springfield
Nash, W. Hampton, St. Louis
Natoli, William J., St. Louis
Nawrocki, Joseph F. J., St. Louis
Neal, M. Pinson, Columbia
Needels, Orval T., Kansas City
Neff, Robert L., Joplin
Neilson, Arthur W., St. Louis
Neilson, Charles H., St. Louis
Neis, Harry B., Harrisonville
Nelson, Charles S., Kansas City
Nelson, William, St. Louis
Nemec, Stanley S., St. Louis
Ness, Carl K., St. Joseph
Nester, Charles A., St. Louis
Nester, Gerard A., St. Louis
Neubeiser, Ben L., St. Charles
Neumann, Roland F., Jr., St. Louis
Neun, W. F., St. Louis
Nevins, Roscoe C., Mountain View
Newlon, John S., Nevada
Newman, Harold G., St. Louis
Newman, Percy, St. Louis
Newton, Henry O., La Plata
Nichols, Frank J., Mokane
Nichols, Samuel I., Burnwell, Va.
(Member St. Charles County)
Nicholson, Clarence M., St. Petersburg, Fla.
(Member St. Louis Medical Society)
Nickson, Charles E., Jr., Independence
Nicolai, Charles H., Clayton
Nicolay, Kenneth S., Kansas City
Niedermeyer, Edward L., Tarkio
Niedermeyer, F. P., Kansas City
Niederwimer, John, Koch
Nienstedt, Elam J., Sikeston
Niesen, Frank Joseph, St. Louis
Nifong, Frank G., Columbia
Nigro, D. M., Kansas City
Nigro, E. Robert, Kansas City
Nigro, Joseph A., Kansas City
Nisbet, Eliga B., Odessa
Nix, W. K., Marshall
Nixon, Edward E., Gallatin
Noah, Joseph W., St. Louis
Nolan, Charles J., St. Louis
Noller, Henry W., St. Louis
Noltensmeyer, Milton N., Kansas City
Norman, Robert M., Ava
Northcutt, Mary Jane, Cassville
Northup, Glenn R., St. Louis
Norton, Harry B., Hannibal
Norton, William H., St. Louis
Novota, Otto J., Smithville
Nuetzel, John A., East St. Louis, Ill.
(Member St. Louis Medical Society)
Nulton, Ida May, Lancaster
Nunn, Pat Morris, Kansas City, Kansas
(Member Jackson County)
Nussbaum, Paul B., Cape Girardeau
Nussbaum, Robert A., St. Louis
Nye, Robert S., St. Louis

O

Obermeyer, Charles G., St. Louis
O'Brien, Edward C., St. Louis
O'Brien, Harry F., Mexico
O'Brien, James A., Springfield
O'Brien, Leo A., Kansas City
O'Brien, Raymond W., Kansas City
O'Brien, Robert M., St. Louis

Obrock, Louis C., St. Louis
Ockerblad, Nelse F., Kansas City
O'Connell, John, Overland
O'Connell, P. J., Kansas City
O'Connor, William B., St. Joseph
Odell, Richard T., St. Louis
O'Dell, Timothy T., Ellington
O'Donoghue, James, St. Joseph
O'Dowd, James A., St. Louis
Oehler, William F., Cape Girardeau
Oetting, Henry K., Los Angeles, Calif.
(Member St. Louis County)
Ogilvie, John H., Kansas City
Oglevie, Rial R., Kansas City
Ogura, Joseph H., St. Louis
Ohmoto, Masao, St. Louis
O'Keefe, C. D., St. Louis
Olmsted, William H., St. Louis
Olson, Erwin T., Brookfield
O'Malley, Eugene J., St. Louis
O'Neil, James H., Kansas City
O'Neill, John B., St. Louis
Oppenheimer, Henry E., St. Louis
O'Reilly, Daniel E., St. Louis
Orenstein, Joseph M., St. Louis
Orgel, M. Norman, St. Louis
Ormsbee, James L., Springfield
Orr, Charles H., Ash Grove
Osborne, Charles D., Sedalia
Osgood, George M., Kansas City
Ossman, Julian A., Jefferson City
O'Sullivan, George A., St. Louis
Ott, Harold J., Maplewood
Ottman, Philip A., Marceline
Otto, Thomas G., Cape Girardeau
Overholser, Milton D., Columbia
Owen, William C., St. Louis
Owens, Bert O., St. Louis
Owens, Graham J., Kansas City
Owens, Hugh H., Kansas City
Owens, Michael J., Kansas City
Owens, Robert H., Kansas City

P

Paddock, Charles S., Joplin
Paddock, Richard, St. Louis
Padfield, Earl G., Kansas City
Paine, Robert, St. Louis
Paine, William G., Boonville
Painter, L. B., Jr., Portageville
Pakula, Sidney, Kansas City
Palazzo, Frank A., St. Louis
Paletta, Francis X., St. Louis
Pallett, Harold A., Kansas City
Pampush, James J., St. Louis
Papp, Sandor D., Joplin
Paquin, Albert J., Jr., New York, N. Y.
(Member St. Louis Medical Society)
Parashak, Paul M., St. Louis
Parato, John M., Bernalillo, N. Mex.
(Member St. Louis Medical Society)
Pareira, Morton D., St. Louis
Park, George M., Eureka
Park, William E., Cardwell
Park, William I., Jr., Springfield
Parker, A. C., Jr., Poplar Bluff
Parker, Elmer L., Kansas City
Parker, H. Graham, Platte City
Parker, Harry F., Warrensburg
Parker, Hubert M., Kansas City
Parker, John Z., Pattonsburg
Parker, Joseph W., Jr., Kansas City
Parker, Rainey C., Steelville
Parker, Robert H., N. Kansas City
Parker, Thomas W., St. Louis
Parker, William, St. Louis
Parkhurst, Charles L., Houstonia
Parman, David R., St. Louis
Parsons, Clyde W., Kansas City
Parsons, Ernest H., St. Louis
Parsons, Eugene O., Kansas City
Pascoe, James J., Wichita, Kan.
(Member Vernon-Cedar County)
Passanante, Bartholomew M., St. Louis
Passman, Harold, Kansas City
Pate, O. S., N. Kansas City
Patterson, Henry H., Braymer
Patterson, William R., Warrensburg
Patton, John F., St. Louis
Patton, Leslie E., St. Louis
Paul, Thomas M., St. Joseph
Pawol, S. E., St. Louis
Payne, Richard J., St. Louis
Pearl, John F., St. Clair
Pearse, Roy W., Jr., Nevada
Pearson, Paul E., Kansas City
Peck, Chester R., Jr., Kennett
Peckham, John W., Koch
Peden, Burnet W., St. Louis
Peden, Joseph C., St. Louis
Peden, Joseph C., Jr., St. Louis
Peelcr, James O., St. Louis
Peete, Don Carlos, Kansas City
Pelz, Mort D., St. Louis
Pendleton, George F., Kansas City
Penn, Robert M., Silex
Penncy, David L., St. Louis
Pennington, F. E., St. Louis
Pennoyer, James, St. Louis
Perkins, Maxwell B., Willow Springs
Perll, Maurice F., Kansas City
Perll, Rita D., Kansas City
Pernoud, Flavius G., St. Louis
Pernoud, Flavius G., Jr., St. Louis
Pernoud, Michael F., St. Louis
Perry, David C., Mound City
Perry, John M., Princeton
Perry, Ralph, Kansas City
Persons, Robert C., Maryville
Peters, Ann DeHuff, St. Louis
Peters, Augustus W., St. Louis
Peters, Richard M., St. Louis
Petersen, Fenton J., St. Louis
Petersen, H. E., St. Joseph
Peterson, Carl M., Kansas City
Peterson, Milton C., Kansas City
Peterson, Stanley S., Springfield
Peterson, Walter R., Kansas City
Petry, Ezra L., Kansas City
Petty, Wallace S., Macon
Peugnet, Hubert B., St. Louis
Pfeffer, Robert I., New York, N. Y.
(Member St. Louis County)
Pfeifer, Oliver C., St. Louis
Pfeiffenberger, Mather, Jr., St. Louis
Pfuetze, Edwin L., Kansas City
Phelan, Emma, Kimmswick
Phillips, Hanford, St. Louis
Phipps, George W., Caruthersville
Pickard, Nicholas S., Kansas City
Pickens, E. Allen, Springfield
Pickens, Edgar E., Kansas City
Pickett, Clarence P., Princeton
Pickrell, Claude D., St. Louis
Piekarski, Anthony A., St. Louis
Pieper, Henry G., St. Louis
Pierron, John B., Kansas City, Kan.
(Member Jackson County)
Piper, Donald K., Kansas City
Pipkin, Garrett, Kansas City
Pipkin, Walter D., Monroe City
Pittam, Radford F., Kansas City
Pittam, J. Thomas, Kansas City
Pitzman, Marsh, St. Louis
Plag, Albert F., St. Louis
Platt, Paul C., Kansas City
Platz, John H., Carrolton
Pletcher, K. E., London, England
(Member Franklin County)
Ploehn, Emma, St. Louis
Plumlee, William C., Springfield
Plummer, Grover C., Buffalo
Plumpe, W. Tupper, St. Louis
Polk, George M., Lees Summit
Pollock, Ellis L., St. Louis
Pollock, Leo H., Kansas City
Pollock, Maxwell A., St. Louis
Poor, Carl W., Diamond
Poorman, Bert A., Kansas City
Pope, Nathan K., Springfield
Popejoy, H. R., California
Porter, Louis, Kansas City
Porter, Russell C., N. Kansas City
Portuondo, Bonaventura C., St. Louis
Post, Cyril A., Poplar Bluff
Post, Lawrence T., St. Louis
Post, M. Hayward, St. Louis
Post, Wilfred L., Joplin
Potashnick, Robert, St. Louis
Pote, Thomas B., St. Louis
Potter, Allen B., St. Louis
Potter, Lee G., Kansas City
Potter, Reese, Webster Groves
(Member Vernon-Cedar County)
Potter, Thompson E., St. Joseph
Powell, Benson M., Kansas City
Powell, Carl A., Jefferson City
(Member St. Louis Medical Society)
Powell, Earl A., St. Louis
Powell, Edwin M., Springfield
Powell, Rudolph V., St. Louis
Powers, Everett, Carthage
Powers, John M., Kansas City
Powers, Pierce W., St. Louis
Pranger, Sylvester H., St. Louis
Prentiss, Harry S., Kansas City
Presnell, Cleitus A., St. Louis
Presnell, George R., Kennett
Press, Maurice J., St. Louis
Preston, Albert, Kansas City
Price, Edward B., Kansas City
Price, Robert P., Fulton
Prichard, Joseph, Overland
Printz, Joseph H., Kansas City
Printz, Otto J., Kansas City
Pritchett, Paul L., Webb City
Probstein, Jacob G., St. Louis
Proctor, Carter A., Sullivan
Proetz, Arthur W., St. Louis
Proud, G. O'Neil, Kansas City
(Member St. Louis County)
Pruett, Burchard S., St. Louis
Pruett, Hubert S., St. Louis
Puckett, Cordelia, St. Louis
Pulliam, Madison J., St. Louis
Purcell, Harry K., St. Louis
Putnam, John A., Kansas City
Pyne, Herbert S., St. Louis
Pyrtle, James R., Centerville

Q

Quinn, Abram T., St. Louis
Quirin, Warren S., St. Louis
Quisito, Joseph M., Trenton
Quistgard, Paul C., Kansas City

R

Rachin, Maxwell, St. Louis
Rader, Ada B., Martin City
Raemdonck, Alphonse, St. Louis
Ragan, Romulus C., Kansas City
Ragsdale, George M., Paris
Ragsdale, William E., Jr., Phoenix, Ariz.
(Member St. Louis Medical Society)
Rainwater, E. H., Springfield
Ramos, John F., Jr., Kansas City
Ramos, Raoul L., Santruce, Puerto Rico
(Member St. Louis Medical Society)
Ramsey, Ora W., Marionville
Randall, Don Q., St. Charles
Randall, Leslie, Licking
Rannie, Paul R., Independence
Rassieur, Louis, St. Louis
Rawlins, Kelly, Holden
Ray, Richard H., St. Louis
Ready, James H., Florissant
Redmond, William, St. Joseph
Reed, Carl H., Carrollton
Reed, Henry L., Licking
Reeder, Charles Clinton, New Madrid
Rees, William J., Kansas City
Reese, A. Victor, Webster Groves
Reeves, George W., Farmington
Regan, William W., Sheppard AFB, Tex.
(Member St. Louis Medical Society)
Reh, Edward P., St. Louis
Reich, Harry A., St. Louis
Reich, Oliver F., Kimmswick
Reiches, Aaron J., St. Louis
Reichman, John J., Hannibal
Reid, Charles T., Joplin
Reid, James A., Marshall
Reilly, Leo J., St. Louis
Reilly, Pierce J., St. Louis
Reilly, Terence M., Vallejo, Calif.
(Member St. Louis Medical Society)
Reim, Hugo, St. Louis
Reinhard, Edward H., Webster Groves
Reinhardt, George R., San Francisco, Calif.
(Member Jackson County)
Reis, Carl J., St. Louis
Reitz, Carl H., Kansas City
Remley, George C., Kansas City
Rendleman, George F., St. Louis
Repetto, Albert M., St. Louis
Reser, Thomas S., Colecamp
Resnikoff, Lewis E., St. Louis
Reuter, Louis A., St. Louis
Reutter, Garfield A., Rockport
Reynolds, Fred, St. Louis
Reynolds, Garland A., Cape Girardeau
Reynolds, James R., Neosho
Rhoades, Arthur B., Kansas City
Rhodes, Euhlan L., Sedalia
Rice, Earl R., St. Louis
Rice, Grover C., Brunswick
Richardson, Marion W., Kansas City
Richardson, R. G., Jefferson City
Richardson, William R., Union
Richman, Elmer, St. Louis
Richtarsic, Stephen R., Clayton
Richter, William B., Stockton
Riddell, Richard V., St. Joseph
Ridings, Harold D., Cape Girardeau
Ries, Douglas A., Richmond Heights
Riley, Fred P., Perryville

Rigney, Levi M., Springfield
Riley, Ralph D., St. Louis
Riley, William H., St. Louis
Riller, Lowell L., Kansas City
Ringo, Henry J., St. Louis
Rinkel, Herbert J., Kansas City
Riordan, Lawrence M., St. Louis
Rising, Jesse D., Kansas City
Ritchie, Frances R., St. Louis
Ritter, Raymond A., Cape Girardeau
Robbins, Martin V., Peculiar
Roberson, John H., Lilbourn
Roberts, Harold K., St. Louis
Roberts, Harold M., Kansas City
Roberts, John R., Brentwood
Roberts, Sam E., Kansas City
Robertson, Frank G., St. Louis
Robertson, J. Archie, Kansas City
Robertson, LeRoy L., St. Louis
Robertson, Robert C., St. Cloud, Minn.
(Member Ozarks Counties)
Robichaux, E. B., Excelsior Springs
Robichaux, E. C., Excelsior Springs
Robins, Eli, St. Louis
Robinson, Don, U. S. Navy
(Member Saline County)
Robinson, Edith C., St. Louis
Robinson, Edward E., Adrian
Robinson, Ernest Kip, Kansas City
Robinson, George G., Humansville
Robinson, G. Wilse, Kansas City
Robinson, G. Wilse, Jr., Kansas City
Robinson, John A., Edgerton
Roblee, Melvin A., St. Louis
Roche, Maurice B., St. Louis
Rodeman, John M., Sedalia
Rodgers, Elrie P., St. Louis
Rodgers, Samuel U., Kansas City
Roe, Allen N., St. Louis
Roebber, Harry M., Bonne Terre
Rogers, C. H., St. Louis
Rogers, John A., University City
Rohlfing, Edwin H., St. Louis
Rohlfing, Walter H., St. Louis
Rolens, Louis E., Granby
Roller, Merrill J., Hannibal
Rollins, H. D., Winona
Rolwing, E. Charles, Charleston
Romendick, Samuel S., Indianapolis, Ind.
(Member St. Louis Medical Society)
Roock, Paul C., Omaha, Nebr.
(Member Phelps County)
Roper, Stanley D., Ozark
Rose, Charles W., Kansas City
Rose, Dalton K., St. Louis
Rose, Frank H., Albany
Rosen, Charles S., St. Louis
Rosen, Max, Springfield
Rosenbaum, Harry D., St. Louis
Rosenberg, Henry E., St. Louis
Rosenberg, Meyer B., St. Louis
Rosenfeld, Henry, St. Louis
Rosenfeld, Herman, St. Louis
Rosenthal, Frances E., Joplin
Rosenthal, Irwin I., St. Joseph
Rosenthal, Leonard G., St. Louis
Ross, Pren J., Grant City
Rost, William B., St. Joseph
Roth, John J., address unknown
(Member St. Louis Medical Society)
Rothman, David, St. Louis
Rothman, Paul M., St. Louis
Rotter, Julius C., St. Louis
Roufa, Joseph F., St. Louis
Roulfac, George E., St. Louis
Roundy, Collis I., St. Joseph
Rouse, David M., LaBelle
Rouse, Ernest T., St. Louis
Rowe, Alfred R., Poplar Bluff
Rowlette, Avery P., Moberly
Roy, Gustave A., Oceanside, Calif.
(Member Jackson County)
Royce, Robert K., St. Louis
Royse, Roy J., Sullivan
Royston, Grandison D., Hope, Ark.
(Member St. Louis Medical Society)
Rubbra, Jean O., Kansas City
Rubin, Sidney, Kansas City
Rubnitz, Leon H., Kansas City
Ruddell, George W., St. Louis
Rudi, Herbert J., St. Louis
Rufe, Jack R., Kansas City
Ruff, Eugene, Cape Girardeau
Ruhling, Rudolph, St. Louis
Rund, Emmet H., St. Louis
Rupe, Wayne A., St. Louis
Russell, Barbara E., Rolla
Russell, James M., Monett
Rusk, Earl M., New Bloomfield
Rutledge, John F., Crystal City
Rutledge, Paul E., Webster Groves
Rutledge, William J., Campbell
Ryan, John B., Hermann
Ryan, John H., St. Joseph
Ryan, John J., Clayton
Ryan, Linus M., St. Louis
Ryan, Robert A., Mountain Grove
Ryan, Robert E., St. Louis
Ryburn, John P., St. Louis
Ryland, Caius T., Lexington

S

Sachar, Leo A., St. Louis
Saferstein, A. Lester, Kansas City
Saferstein, T. Harry, St. Joseph
St. John, Dewey, St. Louis
St. John, Thomas C., St. Louis
Saladino, Anthony, Kansas City
Sale, Llewellyn, St. Louis
Sale, Llewellyn, Jr., St. Louis
Salisbury, William J., St. Louis
Salyer, Charles E., Marshall
Sample, George A., Chaffee
Samson, Ralph B., Kansas City
Samuelson, Edward A., Kansas City
Sanders, George E., Excelsior Springs
Sanders, Robert D., St. Louis
Sanders, Theodore E., St. Louis
Sanders, William F., Kansas City
Sandperl, Harry, St. Louis
Sandy, Charles, Mission, Kan.
(Member Cooper County)
Sanford, Joseph Hoy, St. Louis
Sante, L. R., St. Louis
Sargent, Alden P., Sikeston
Sargent, Frederick K., St. Louis
Sarno, S. M., Morehouse
Sartin, John M., Springfield
Sasaki, George R., O'Fallon
Saslow, George, St. Louis
Sassin, Edmond F., St. Louis
Sato, George, St. Louis
Satterfield, Val B., Bremerton, Wash.
(Member St. Louis Medical Society)
Sauer, F. J. Dean, St. Louis
Sauer, Gordon C., St. Joseph
Sauer, W. Nicholas, St. Louis
Sauer, William E., St. Louis
Saunders, Everett L., Independence
Sausville, Albert J., St. Louis
Saxton, John A., Jr., St. Louis
Saylor, Robert King, Joplin
Scarpellino, Louis, Kansas City
Schaaf, Katherine M., St. Louis
Schaefer, Charles L., Kansas City
Schaerrer, Hans, Kansas City
Schaerrer, William C., Kansas City
Schaffer, Richard C., Kansas City
Schattyn, Martyn, St. Louis
Schauffler, Robert M., Kansas City
Schechter, Samuel E., St. Louis
Scheele, Paul M., University City
Scheer, George E., St. Louis
Scheff, Harold, St. Louis
Scherman, Victor E., St. Louis
Scherrer, Fred W. J., St. Louis
Schertz, Truman B., St. Joseph
Schiele, Herbert S., Jr., St. Louis
Schiffmacher, Jack E., Kansas City
Schlenker, John L., St. Louis
Schlenker, Lawrence, St. Louis
Schlossstein, Adolph G., St. Louis
Schluer, Elmer P., St. Louis
Schlueter, Newell W., St. Louis
Schlueter, Robert E., St. Louis
Schmidt, Charles A., Washington
Schmidt, Edmund M., St. Louis
Schmidt, Edwin H., St. Louis
Schmidt, Herbert H., Washington
Schmidtke, Edwin C., Columbia
Schmiemeier, Herman A., St. Louis
Schmiemeier, Roy H., St. Louis
Schmitz, Edgar F., St. Louis
Schneider, Sam, St. Louis
Schneider, Vincent A., St. Charles
Schnoebelen, Paul C., St. Louis
Schoeberl, C. B., Joplin
Schoetker, George H., Clearwater, Fla.
(Member St. Louis Medical Society)
Scholz, Roy P., St. Louis
Schooley, Reinick C., Odessa
Schopp, Alvin C., St. Louis
Schorer, Edwin H., Kansas City
Schrepel, Herbert O., St. Louis
Schroeder, Sidney O., Liberty
Schuchat, W. Louis, St. Louis
Schuck, Philip, St. Louis
Schulein, Vernon E., Crystal City
Schulte, G. A., Joplin
Schultz, Loraine E., Kansas City, Kan.
(Member Jackson County)
Schultz, Samuel, St. Louis
Schulz, A. P. Erich, St. Charles
Schulz, Gustav B., Cape Girardeau
Schumacher, Cyril W., St. Louis
Schultz, Carl B., Kansas City
Schutz, Richard B., Kansas City
Schwartz, Alfred S., St. Louis
Schwartz, Eugene J., Springfield
Schwartz, Frederick O., St. Louis
Schwartz, Henry G., St. Louis
Schwartzman, Bernard, St. Louis
Schwarz, Henry II. Aspinvale, Pa.
(Member St. Louis County)
Schweiss, John Francis, St. Louis
Schweitzer, Fred C., Jr., Springfield
Sciortino, Gaspare, St. Louis
Sciortino, John S., St. Louis
Scobee, Richard G., St. Louis
Scopelite, Joseph A., St. Louis
Scorse, Sidney W., Joplin
Scott, Clive D., Louisiana
Scott, Elijah A., St. James
Scott, Elwin P., St. Louis
Scott, Henry F., Ballwin
Scott, J. U., Harrisonville
Scott, Wendell G., St. Louis
Seabaugh, D. Rusby, Cape Girardeau
Seabaugh, Dayton I. L., Jackson
Seabaugh, Oda L., Cape Girardeau
Seabaugh, O. D., Webster Groves
Seabold, John A., St. Louis
Seaman, William B., St. Louis
Seddon, John W., St. Louis
See, William B., Columbia
Seelig, Major G., Atherton, Calif.
(Member St. Louis Medical Society)
Seely, Clark W., Kansas City
Seib, George A., St. Louis
Selle, Harold C., Ferguson
Sellers, Charles J., Mt. Moriah
Senn, Emmett J., Herculaneum
Senne, Herbert C., St. Joseph
Sennott, John S., Jefferson City
Senor, Samuel D., St. Joseph
Senor, Samuel E., St. Joseph
Senseney, Eugene T., St. Louis
Senturia, Ben H., St. Louis
Senturia, Hyman R., St. Louis
Sertl, John D., St. Louis
Settle, Charles T., Rockport
Settle, Emmett B., Rockport
Sevin, Omar R., St. Louis
Sewell, Minor F., Kansas City
Sewell, W. S., Springfield
Sewing, Arthur H., St. Louis
Sexauer, Arthur E., St. Genevieve
Sexton, Daniel L., St. Louis
Sexton, Elmer E., St. Louis
Shackelford, Horace H., St. Louis
Shahan, Philip T., St. Louis
Shahan, William E., St. Louis
Shaner, John F., St. Louis
Shanklin, Benjamin, St. Louis
Shapiro, Lazare M., Kansas City
Shapleigh, John B., St. Louis
Sharp, Cecil A. Z., St. Louis
Shatz, Burton A., St. Louis
Shaver, Nellie A., St. Louis
Shaw, Carvel T., Hermann
Shaw, William J., Fayette
Shaw, William J., Jr., Fayette
Shears, Robert N., Kansas City
Sheedy, John A., San Francisco, Calif.
(Member St. Louis Medical Society)
Sheets, John S., St. Louis
Sheets, Martin E., St. Louis
Shelby, Mitchell H., Cape Girardeau
Shelden, Russell D., Kansas City
Sheldon, John G., Kansas City
Sheldon, John, Jr., Kansas City
Shelton, Edward O., Eldon
Shelton, Harold J., St. Louis
Shepherd, C. T., St. Louis
Sherard, Julius C., St. Louis
Sheridan, Edmund R., St. Louis
Sherwin, Charles F., St. Louis
Sherwin, Charles S., St. Louis
Sherwood, Loraine, Kansas City
Shevlin, Charles F., St. Joseph
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Cowan, Watt O., Greenfield
Duckett, Claude E., Lamar
Guldner, Edmond, Lamar
Heilbrunn, Max, Lockwood
Knapp, Rudolf, Golden City
Locker, George E., Iantha
McNeel, Lee A., Jr., Greenfield

BATES COUNTY MEDICAL SOCIETY

Allen, Claude J., Rich Hill
Allen, Wm. H., Jr., Hume
Cooper, John M., Butler
Ellett, Wm. H., Appleton City
Hansen, Arthur L., Butler
LaHue, L. D., Butler
Lusk, Charles A., Jr., Butler
Luter, Carter W., Butler
Robinson, Edward E., Adrain
Sipes, Frank M., Irving, Texas

BENTON COUNTY MEDICAL SOCIETY

Glenn, David H., Warsaw
Logan, James A., Warsaw
Reser, Thomas S., Cole Camp

BOLLINGER COUNTY
(Unorganized)

BOONE COUNTY MEDICAL SOCIETY
(Columbia)

Ackerman, Lauren V., 225 Blackmar Pl., St. Louis
Allee, James W., Columbia Professional Bldg.
Allen, Horace E., 1 W. Broadway
Allen, Jerry H., 90 N. Grant Rd., St. Louis
Allen, Joseph E., Ellis Fischel Hospital
Abel, Norman D., Camp Carson, Colo.
Atkins, James A., 506 Cherry St.
Baker, James M., 16 S. 10th St.
Baskett, Edgar D., 16 S. 10th St.
Battersby, Richard S., 113 Westwood
Bradford, Oscar F., 205 Exchange Bldg.
Bruner, Claude R., 909 University Ave.
Chalkley, Judson I., 329 Main St., Boonville
Chiasson, E. Chaille, 412 Guitar Bldg.
Conley, Dudley S., 17 Bingham Rd.
Cooper, Maurice E., 8 Wayne Rd.
Cope, James C., Columbia Professional Bldg.
Crouch, Richard L., 705 S. 7th, Maywood, Ill.
Dietrich, Karl Davis, University Hospital
Dysart, Wm. P., 16 S. 10th
Edmondson, Paul J., 101 S. Singleton, Centralia
Etheredge, Maude O., 18 Clinton Dr.
Garrett, Glen H., Columbia Professional Bldg.
Gay, Leonard A., Ellis Fischel Hospital
Gorelick, David F., O'Reilly Hospital, Springfield
Griffith, Harry M., 817 W. Broadway
Hall, John, Ashland
Hardwicke, Henry, Stephens College
Johnson, Richard E., Ellis Fischel Hospital
Kampschmidt, A. W., 22 N. 8th St.
Lachance, Leopold, Centralia
Ladenson, Roland P., 16 S. 10th
Lamke, Charles M., 909 University Ave.
Leech, Charles A., 417 Guitar Bldg.
Leeper, Claude K., 1 Raynor Pl., Ferguson
McComas, Arthur R., Sturgeon
Miller Leroy J., Ashland
Modlin, John J., 207 Edgewood Ave.
Moss, Wm. T., Ellis Fischel Hospital
Neal, M. P., Univ. of Missouri Medical School
Nifong, Frank G., Route 1
Overholser, M. D., Univ. of Missouri Medical School
Schmidtke, Edwin C., 909 University Ave.
See, Wm. Bernard, Professional Bldg.
Simpson, Lloyd, Miller Bldg.
Smith, Gladys C., 800 N. 8th St.
Smith, Stephen D., 1404 E. Broadway
Stewart, Wm. J., 909 University Ave.
Stine, Dan G., 22 N. 8th
Stubbs, Trawick, 117 McAlester Hall
Suggett, Finis C., 805 Broadway
Sweets, Henry H., Jr., 909 University Ave.
Thomas, Horace E., 909 University Ave.
Tinsley, John C., Jr., Ellis Fischel Hospital
Trimble, George X., Washington Univ., St. Louis
Waggoner, Charles M., Columbia Professional Bldg.
Washington, Edward L., 909 University Ave
Windmiller, Myrl E., Exchange Bldg.
Yeager, Helen E., 208 Westmount

BUCHANAN COUNTY MEDICAL SOCIETY
(St. Joseph)

Allaman, John M., 706 Francis St.
Almada, Albert A., Stockton, Calif.
Andrews, Berneil W., 902 Edmond St.
Beck, Leroi, 201 King Hill Bldg.
Bell, John M., 2805 Lafayette Ave.
Benson, Scott C., 510 Corby Bldg.
Berney, Francis J., 1225 N. 10th St.
Biggins, Cloice H., 1302 Faraon St.
Bloomer, Gaylord T., 1220 N. 3rd St.
Boteler, George M., Nevada
Brooker, R. M., 39th & Rainbow, Kansas City, Kan.
Brumm, Harold J., 902 Edmond St.
Buck, Ronald, 902 Edmond St.
Butler, E. F., Carrollton
Byrne, John I., 3002 Frederick Blvd.

Carle, H. W., Jr., 706 Francis St.
Carpenter, George T., 902 Edmond St.
Chiarottino, Joseph F., 1302 Faraon St.
Conrad, Robert W., 404 Tootle Bldg.
Craig, Owen W. D., 405 Tootle Bldg.
Dawson, Orville L., 403 Corby Bldg.
Day, Maxwell, 2023 Hutton Dr., Nashville, Tenn.
DeLamater, Hasbrouck, 101 S. 19th St.
DuMont, Clement C., 1905 Francis St.
Eliscu, Fred, 212 S. 17th St.
Elliott, John R., 801½ Francis St.
Ferguson, Luther J., 723½ Felix St.
Fisher, Joseph L., 824 Edmond St.
Fordyce, Claude P., 118 N. 8th St.
Forgrave, John R., 420 N. 8th St.
Forgrave, Leon Paul, 420 N. 8th St.
Forman, George W., 902 Edmond St.
Fuller, Charles D., 212 Kirkpatrick Bldg.
Fuson, Levi H., Kirkpatrick Bldg.
Grant, Claude S., 1302 Faraon St.
Greenberg, Charles, 706 Francis St.
Grimes, M. E. Kirkpatrick Bldg.
Handler, Eric, 706 Francis St.
Hansen, Walter J., 2802 Jule St.
Hartigan, Frank X., 620 Francis St.
Herman, Allen I., Kirkpatrick Bldg.
Howden, Thomas L., Kirkpatrick Bldg.
Hughes, Judson M., Kirkpatrick Bldg.
Hull, Walter S., Court House
Hunt, Wm. John, 310 Schneider Bldg.
Ide, Lucien W., 902 Edmond St.
Kearby, Howard D., Kirkpatrick Bldg.
Kieber, R. W., 706 Francis St.
Kirk, John S., 306 Phys. & Surg. Bldg.
Knepper, P. A., 902 Edmond St.
Kulowski, Jacob, 415 Corby Bldg.
Lau, Gustav A., 217 Kirkpatrick Bldg.
McDaniel, John R., 902 Edmond St.
McDonald, Wilbur P., 301 N. 8th St.
McGlothlan, A. B., 824 Edmond St.
Meluney, S. E., Kirkpatrick Bldg.
Miller, Eugene A., 1400 N. 25th St.
Minton, Robert S., 705 Corby Bldg.
Minton, William H., 705 Corby Bldg.
Moen, Berwyn H., 902 Edmond St.
Morroway, James H., State Hospital No. 2
Morse, Marvin, 2702 Faraon St.
Muench, Albert H., 706 Francis St.
Mullinax, Orr, State Hospital No. 2
Mundy, Homer F., 404 S. 3rd St.
Ness, Carl K., 902 Edmond St.
O'Connor, Wm. B., 219 Kirkpatrick Bldg.
O'Donoghue, James, 902 Edmond St.
Paul, Thomas M., 706 Francis St.
Petersen, H. E., 212 Kirkpatrick Bldg.
Potter, Thompson E., 731 Faraon St.
Redmond, William, Kirkpatrick Bldg.
Riddell, Richard V., Missouri Methodist Hospital
Rosenthal, Irwin I., 706 Francis St.
Rost, Wm. B., Corby Bldg.
Roundy, Collis I., Kirkpatrick Bldg.
Ryan, John H., 301 N. 8th St.
Saferstein, T. Harry, 424 Felix St.
Sauer, Gordon C., 902 Edmond St.
Schertz, Truman B., 902 Edmond St.
Senne, Herbert C., 706 Francis St.
Senor, Samuel D., 722½ Francis St.
Senor, Samuel Earl, 722½ Francis St.
Shevlin, Charles F., 902 Edmond St.
Simmons, Benjamin B., 801½ Francis St.
Smith, Andrew J., 706 Francis St.
Smith, Clifton, 218 N. 7th St.
Spencer, Floyd H., 404 Kirkpatrick Bldg.
Stacy, Winton T., Camp Atterbury, Ind.
Stamey, James T., 2624 St. Joseph Ave.
Tadlock, Baxter W., King Hill Bldg.
Tahir, Mohammad, 228 Illinois Ave.
Thomas, Forrest, State Hospital No. 2
Thompson, Fred G., 825 Charles St.
Thompson, F. G., Jr., 902 Edmond St.
Timerman, Arthur R., 234 Illinois Ave.
Wadlow, Ernest E., Kirkpatrick Bldg.
Whitsell, John C., 824 Edmond St.
Whitsell, O. E., 824 Edmond St.
Willumsen, Henry C., 902 Edmondson St.
Wisser, John J., 109 N. 8th St.

BUTLER COUNTY MEDICAL SOCIETY

Biggs, Fred J., Jr., Poplar Bluff
Bond, Francis G., Poplar Bluff
Brandon, Walter L., Poplar Bluff
Brookreson, Alton F., Poplar Bluff
Canlas, Emilio M., Poplar Bluff
Clay, Hampson S., Poplar Bluff
Cline, Edward W., Poplar Bluff
Dinelli, Frank E., Poplar Bluff
Ellis, Ralph Victor, Poplar Bluff
Fonda, James W., Poplar Bluff
Harwell, James Lee, Poplar Bluff
Harwell, J. Lester, Poplar Bluff
Henrickson, H. O., Poplar Bluff
Henrickson, Hardin M., Poplar Bluff
Henrickson, William E., Poplar Bluff
Johnson, Frank C., Doniphan
Kneibert, Fred L., Poplar Bluff
Loughead, John R., 6221 Sunshine Dr., St. Louis
McPheeters, James W., Poplar Bluff
McPheeters, J. W., Jr., Poplar Bluff
Macauley, Bernard J., Poplar Bluff
Markel, Arthur D., Poplar Bluff
Parker, A. C., Jr., Poplar Bluff
Post, Cyril A., Poplar Bluff
Rowe, Alfred R., Poplar Bluff
Spaulding, William, Poplar Bluff
White, Homer E., Naylor
Williams, James E., Doniphan

CALDWELL COUNTY
(Grand River Medical Society)

CALLAWAY COUNTY MEDICAL SOCIETY

Blasko, John J., Gulfport, Miss.
Brown, John J., Fulton
Caldwell, James C., Fulton
Cremer, Wm. J., Fulton
Crews, Robert N., Fulton
Durst, Henry, Fulton
Gish, E. Rutledge, Fulton
Glotfelty, Wayne, Lexington, Ky.
Hall, Robert G., Nevada
Hunter, James R., Fulton
Lanier, Andrew S., Fulton
Lanier, Patricia F., Fulton
McCubbin, J. Burlie, Fulton
Nichols, Frank J., Mokane
Price, Robert P., Fulton
Rusk, Earl M., New Bloomfield
Williamson, Wm. Henry, Mokane
Wood, George F., Fulton

CAMDEN COUNTY MEDICAL SOCIETY

Claiborne, Edward G., Camdenton
Myers, George T., Macks Creek

CAPE GIRARDEAU COUNTY MEDICAL SOCIETY
(Cape Girardeau)

Ashley, Hugh Jr., 711 Broadway
Ashley, Hugh V., 711 Broadway
Barnes, Seth S., 1854 Broadway
Berry, John W., 212 Grissom Bldg.
Blaylock, Richard D., Oak Ridge
Campbell, Edward D., 701 Good Hope St.
Cochran, J. Howard, 709 Broadway
Crites, Edward, Sedgewickville
Crowe, John T., 701 Good Hope St.
Cunningham, Harvey L., 420 H. & H. Bldg.
Davault, Webster W., Delta
Drace, James J., 322 Broadway
Elrod, Dennis B., 1912 Broadway
Estes, Albert M., 714 Broadway
Ford, Walter W., Gordonville
Fuerth, Arthur L., 710 Good Hope St.
Gibson, Ora J., 1912 W. Broadway
Hall, Frank W., 826 Themis St.
Herbert, Charles T., 824 Good Hope St.
Jaeger, Joseph N., Jackson
Juden, Alexander G., 710 Good Hope St.
Keim, John Harry, 801 Broadway
Kinder, James A., 826 Themis St.
McDonald, Eugene F., Jackson
Nussbaum, Paul B., 704 Broadway
Oehler, Wm. F., 234 N. Middle St.
Otto, Thomas G., 1912 Broadway
Reynolds, Garland A., 826 Themis St.
Ridings, Harold D., 1858 Broadway
Ritter, Raymond A., 1912 Broadway
Ruff, Troy E., Little Rock, Ark.
Schulz, Gustav B., 605 Broadway
Seabaugh, D. Rusby, 801 Broadway
Seabaugh, D. I. L., Jackson
Seabaugh, Oda L., 720 South Blvd.
Shelby, M. H., 726 Themis St.
Trolinger, J. H., Jackson
Tygett, Glenn J., 215 N. Sprigg St.
Wescoat, Wm. H., 318 Broadway
Wilson, Charles F., 727 Broadway
Wolff, Paul G., 727 Broadway
Zimmermann, C. A. W., 222 N. Middle St.

CARROLL COUNTY MEDICAL SOCIETY

Allen, Erroll W., Carrollton
Atwood, J. Morris, Carrollton
Atwood, Wm. G., Carrollton
Bales, Eugene L., Carrollton
Platz, John H., Carrollton
Reed, Carl H., Carrollton
Staton, R. Hamilton, Carrollton

CARTER-SHANNON COUNTY MEDICAL SOCIETY

Cotton, Tolman W., Van Buren
Davis, Robert I., Birch Tree
Rollins, H. D., Winona

CASS COUNTY MEDICAL SOCIETY

Barger, O. B., Harrisonville
Beckman, William, Strasburg
Brown, Wm. R., Pleasant Hill
Eklund, Alfred W., Pleasant Hill
Ellis, Colburn H., Garden City
Hartwell, Basil O., Drexel
Jones, Edward S., Harrisonville
Long, David S., Harrisonville
Murray, Lotis V., Pleasant Hill
Neis, Harry B., Harrisonville
Robbins, Martin V., Peculiar
Scott, James U., Harrisonville
Tracy, Herbert A., Belton
Triplett, Jacob S., Harrisonville

CEDAR COUNTY
(Vernon-Cedar County Medical Society)

CHARITON-MACON-MONROE-RANDOLPH COUNTY MEDICAL SOCIETY

Baker, Henry, Moberly
Baker, Josephine D., Moberly
Barnett, Floyd A., Paris
Billeter, Wm., Bynumville
Buck, Ulysses G., Rothville
Campbell, James E., Macon
Chute, W. Deward, Moberly
Cohrs, Clarence C., Moberly
Dixon, Charles H., Moberly
Dreyer, Philip V., Huntsville
Eggleston, Donald E., Macon
Epperly, R. G., Huntsville
Erni, Harry E., Macon
Fellows, Wm. W., Albany, N. Y.
Fleming, Jacob W., Jr., Moberly
Fleming, Thomas S., Moberly
Hardy, John W., Sumner
Harms, Florian L., Salisbury
Hawkins, George W., Salisbury
Hawkinson, W. O., Roanoke
Huber, L. E., Moberly
Hyatt, Wm. T., 3805 S. Broadway, St. Louis
Knapp, Mark Robert, La Plata
Lewis, Andrew L., Sumner
Lucas, Wm. B., Mendon
McAdam, James D., Prairie Hill
McCormick, Frank L., Moberly
Megee, Wm. K., Moberly
Miller, D. Herbert, Veterans Hospital Muskogee, Okla.
Miller, Howard S., Macon
Newton, Henry O., La Plata
Petty, Wallace S., Macon
Ragsdale, George Moss, Paris
Rice, Grover C., Brunswick
Rowlette, A. P., Moberly
Smith, C. C., Moberly
Smith, Robert W., Marceline
Stokes, James B., Excello
Streetor, R. D., Mexico City, Mexico
Stuart, Daniel D., Brunswick
Weger, Carl C., Keytesville
West, Wm. D., Mendon
Winn, James W., Boonville
Young, Robert H., Moberly

CHRISTIAN COUNTY
(Ozarks Medical Society)

CLARK COUNTY
(Lewis-Clark-Scotland County Medical Society)

CLAY COUNTY MEDICAL SOCIETY

Bailey, Wm. H., Excelsior Springs
Baird, J. Edward, Excelsior Springs
Chastain, Maurice W., Smithville
Craven, Young D., Long Beach, Calif.
Dawson, Lerton V., Excelsior Springs
Dunham, R. H., N. Kansas City

Dwyer, Reinhardt D., N. Kansas City
Edwards, Theodore F., N. Kansas iCty
Fisher, Edward H., N. Kansas City
Fowler, I. Charles, N. Kansas City
Gay, Elmer E., Richmond
Goodson, Wm. H., Liberty
Hardegree, Harvey, Louisville, Ky.
Hendren, Glenn W., Liberty
Hobbs, Earl B., Smithville
Hodge, Robert H., N. Kansas City
Horton, Ray B., N. Kansas City
Houck, Russell M., Washington, D. C.
Knox, Earl R., N. Kansas City
Langhus, Melvin O., N. Kansas City
McCormick, James E., N. Kansas City
McCracken, Samuel R., Excelsior Springs
Mullins, Bernard L., N. Kansas City
Musgrave, David E., Excelsior Springs
Novoto, Otto J., Smithville
Parker, Robert H., N. Kansas City
Parsons, Clyde W., 4105 Kenwood, Kansas City
Pate, O. S., N. Kansas City
Porter, Russell C., N. Kansas City
Robichaux, Eugene B., Excelsior Springs
Robichaux, Eugene C., Excelsior Springs
Sanders, George E., Excelsior Springs
Schroeder, Sidney O., Liberty
Spelman, A. E., Smithville
Sprong, Aaron A., Excelsior Springs
Wallingford, Fred C., Bartlesville, Okla.
Washburn, Walter L., Gladstone Plaza, Kansas City
Waterman, F. M., Liberty
Webb, J. Warner, Jr., N. Kansas City
Willoughby, James W., Liberty

CLINTON COUNTY MEDICAL SOCIETY

Kimes, Ira D., Cameron
Longfield, Fred J., Lathrop
Luckenbill, Paul T., Plattsburg
Reynolds, Stephen D., Plattsburg
Spalding, W. D., Plattsburg
Starks, John C., Gower
Wilbur, Ronald E., Cameron

COLE COUNTY MEDICAL SOCIETY

(Jefferson City)

Belden, E. A., State Office Bldg.
Bohrer, Edward R., 322 Jefferson St.
Bruce, James G., 234 Madison St.
Buvinger, W. J., Jr., 301 Central Trust Bldg.
Cox, Wm. A., 125 E. High St.
Dorris, Richard P., Trust Bldg.
Enloe, David, Trust Bldg.
Garner, L. M., Division of Health
Gillham, Frank W., Trust Bldg.
Guhleman, Henry V., Jr., 506 E. High St.
Kanagowa, H., Dallmeyer Bldg.
Kelly, Marshall W., 507 E. High St.
Klebba, Larry B., 712 W. High St.
Leslie, J. Paul, Central Trust Bldg.
Leslie, J. T., 234 Madison St.
Leslie, Walter L., Russellville
Loyd, Earl L., 425 Madison St.
McHaney, John W., Trust Bldg.
McKnelly, William von, 234 Madison St.
Mansur, Edward E., 230 Jefferson St.
Matthews, John I., 425 Madison St.
Maxey, Hugh W., 626 Jefferson St.
Meier, F. X., 507 E. High St.
Meinershagen, C. W., State Office Bldg.
Miller, Herbert S., Division of Health
Ossman, Julian A., 2030 W. Main St.
Richardson, R. G., 421 Lafayette St.
Sennott, John S., 507 E. High St.
Shirley, George H., Eugene
Shull, George D., 229 E. High St.
Stauffer, Harry B., Central Trust Bldg.
Stephan, August P., 129 E. High St.
Stricker, Harold C., 430 W. McCarty
Sugarbaker, Everett D., 503 E. High St.
Summers, Joseph S., Trust Bldg.
Summers, Joseph S., Jr., 114 W. Circle Dr.
Tanner, Robert H., 131 E. High St.
Taylor, Herbert I., 111 E. Circle Dr.
Taylor, Leon A., 129 E. High St.

COOPER COUNTY MEDICAL SOCIETY

Beckett, Theodore C., Boonville
Boley, James O., 3200 E. Meyer Blvd., Kansas City
Chamberlain, Gilbert L., New Franklin
Diekroeger, M. L., Boonville
Huelsmann, Donald, Boonville
Humphreys, Edward T., Boonville
Lewis, Ray B., Boonville
Paine, William G., Boonville
Sandy, Charles, Mission, Kansas
Stone, William E., Boonville
Stuart, Byron M., Boonville
Suarez, Nelson, Pilot Grove
Tincher, J. C., Boonville
Wilcox, Howard Lea, Boonville
Winn, George W., Boonville
Ziegler, William H., Boonville

CRAWFORD COUNTY

(Phelps-Crawford-Dent-Pulaski County Medical Society)

DADE COUNTY

(Barton-Dade County Medical Society)

DALLAS-HICKORY-POLK COUNTY MEDICAL SOCIETY

Barnett, C. H., Bolivar
Brooks, John M., Diamond
Glasco, Loren A., Urbana
Griffin, Evelyn, Buffalo
Griffin, Olin A., Jr., Buffalo
Harrell, Henry J., Morrisville
McCraw, Doyle C., Bolivar
Plummer, Grover C., Buffalo
Robinson, George G., Humansville

DAVIESS COUNTY

(Grand River Medical Society)

DEKALB COUNTY MEDICAL SOCIETY

Gale, William S., Osborn
Johnson, Glenn D., Maysville

DENT COUNTY

(Phelps-Crawford-Dent-Pulaski County Medical Society)

DOUGLAS COUNTY

(South Central Counties Medical Society)

DUNKLIN COUNTY MEDICAL SOCIETY

Bailey, S. M., Malden
Baldwin, Paul, Kennett
Beal, Homer, Malden
Bell, Exter F., Address unknown
Belsey, Wallace A., Campbell
Bond, Van H., Hornersville
Cofer, James C., Kennett
Dempsey, D. T., Kennett
Dunmore, George O., Kennett
English, Wallace D., Cardwell
Green, Robert S., Kennett
Hopkins, F. G., Gideon
Linton, C. S., Kennett
Miltenberger, Paul C., Kennett
Mitchell, Samuel E., Malden
Mohler, E. M., Jr., Senath
Park, William E., Cardwell
Peck, Chester R., Jr., Kennett
Presnell, George R., Kennett
Rutledge, Wm. J., Campbell
Speidel, Frederick W., Senath
Spence, Elbert L., Kennett
Spence, George D., Kennett
Tarver, Quinton, Kennett
Van Cleve, John D., Malden
Williams, Charles S., Malden
Wilson, Loys C., Kennett
Zimmerman, Joseph A., Kennett

FRANKLIN COUNTY MEDICAL SOCIETY

Bozzo, Raymond J., Washington
Brenner, Paul A., Owensville
Briegleb, Charles F., St. Clair
de la Torre, John J., Sullivan
Denny, Hubert M., Union
Duckworth, Wm. Henry, St. Clair
Ecker, Decider, Pacific
Eisenmann, Benjamin P., New Haven
Eyermann, H. Walter, Warrenton
Heolscher, Harold F., Warrenton
Johnson, Grover C., Marthasville
Keller, Robert M., Owensville
Kitchell, Wm. Everett, St. Clair
Matthews, Gilpin L., Beaufort
Mayfield, James L., Washington
Mays, Frank G., Washington
Muench, Ludwig O., Washington
Pearl, John F., St. Clair
Pletcher, K. E., U. S. Embassy, London, Eng.
Proctor, Carter A., Sullivan
Richardson, Wm. Robert, Union
Royse, Roy P., Sullivan
Ryan, John B., Hermann
Schmidt, Charles A., Washington
Schmidt, Herbert H., Washington
Shaw, Carvel Thomas, Hermann
Steinbeck, Herbert D., Villa Ridge
Strehlman, Benjamin B., Union
Wepprich, Michael S., Washington

GASCONADE COUNTY

(Unorganized)

GENTRY COUNTY

(Nodaway-Atchison-Gentry-Worth County Medical Society)

GRAND RIVER MEDICAL SOCIETY

(Caldwell-Livingston-Grundy-Daviess-Harrison-Linn-Mercer)

Bohnsack, Ralph W., Brookfield
Booth, Herbert R., Hamilton
Breid, Jacob, Spickard
Brennan, Raymond J., Chillicothe
Brewer, Lake, Ridgeway
Bristow, A. S., Princeton
Bristow, George B., Princeton
Bristow, Robert B., Princeton
Brownfield, Samuel T., Brookfield
Broyles, Watkins A., Bethany
Carpenter, George W., Chillicothe
Clark, Chester L., Trenton
Collier, Alfred, Chillicothe
Conrad, Joseph, Chillicothe
Cullers, Charles H., Trenton
Daley, Frank R., Hamilton
Dixon, John R., Brookfield
Dowell, Donald M., Chillicothe
Dowell, Horace S., Chillicothe
Duffy, Edgar A., Trenton
Duffy, Oliver F., Trenton
Ellis, Wm. Wesley, Marceline
Fuson, Wm. Arthur, Trenton
Gale, Joseph F., Chillicothe
Gearhart, M., Bethany
Grace, Charles M., Chillicothe
Grace, Nathan W., Chillicothe
Haley, Roy R., Brookfield
Kimberlin, Herbert D., Trenton
Lambert, Marian, Princeton
Lee, Leonard R., Bethany
Lowry, Henry L., Tindall
Lucas, John H., Brookfield
McArtor, Thomas R., Browning
McCool, Robert F., 1315 Deckman Ave., Peoria, Ill.
Mairs, Edgar J., Trenton
Mandler, George, Chillicothe
Nixon, Edward E., Gallatin
Olson, Erwin T., Brookfield
Ottman, Philip A., Marceline
Parker, John Z., Pattonsburg
Patterson, Henry H., Braymer
Perry, John M., Princeton
Pickett, Clarence P., Princeton
Quisito, Joseph M., Trenton
Sellers, C. J., Mt. Moriah
Thompson, Emma A. B., Columbia
Vandiver, Virgil D., Chillicothe
Webb, Clifford H., Polo
Wilson, Fred K., Winston

GREENE COUNTY MEDICAL SOCIETY

(Springfield)

Abbott, Clyde B., 219 E. Walnut St.
Amos, James R., 820 E. Elm St.
Anthony, Dallas, Professional Bldg.
Ashley, Thomas E., 1365 S. Kansas St.
Atherton, Mary Jean, 318 St. Louis St.
Barber, John J., Walnut Grove
Beatie, Wm. R., 511 Normal St.
Bechtold, Frederick F., 1630 N. Jefferson Ave.
Boots, Roger H., Medical Arts Bldg.
Box, Earnest M., 412 E. Commercial St.
Brown, Lyman D., 307 College St.
Bruton, Tyrrel S., Woodruff Bldg.
Burke, Walter H., Woodruff Bldg.
Busiek, Paul J., Professional Bldg.
Busiek, Urban J., Professional Bldg.
Callaway, Guy D., 205 St. Louis St.
Coffelt, Kenneth C., 1630 N. Jefferson St.
Coller, Frederick C., 625 Stanford Ave.
Conrad, Raymond C., 609 Cherry St.
Craig, Arthur D., 512 Landers Bldg.
Crawford, Oral B., Medical Arts Bldg.
Delzell, Wm. A., 410 McDaniel Bldg.
Dietz, M. Wendell, Burge Hospital
Dills, Joseph N., Professional Bldg.

Duncan, Robert D., Professional Bldg.
Elkins, Ronald F., Professional Bldg.
Ellis, Francis J., Professional Bldg.
Epps, Curtis, 450 E. Commercial St.
Esch, John Gerald, Republic
Evans, Ezra L., 835 E. Elm St.
Evans, Ezra L., 609 Cherry St.
Farthing Fred R., 1234 E. Walnut
Farthing, Gene W., Medical Arts Bldg.
Feller, C. E., 609 Cherry St.
Ferguson, John P., Jr., 1219 S. Clay St.
Ferrell, Thomas E., Jr., 430 South St.
Fessenden, Ersel M., 634 Kingsbury St.
Fitch, C. H. Max, 300 W. Commercial St.
Focht, Ralph H., Strafford
Freeman, Hal E., 631 Cherry St.
Fulbright, James H., 1033 E. Walnut St.
Gentry, Merritt L., Medical Arts Bldg.
Gifford, Allen W., 1050 E. Walnut St.
Glenn, Elmer E., 200 E. Pershing St.
Glynn, Robert, 500 Holland Bldg.
Griot, George A., Medical Arts Bldg.
Hall, Durward G., 500 Holland Bldg.
Hanan, Ernest B., 600 S. Pershing
Hansbro, Gerald L., 302 Professional Bldg.
Hanss. Armand W., Medical Arts Bldg.
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H'Doubler, Francis T., Professional Bldg.
H'Doubler, Francis T., Jr., Bremerton, Wash.
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Hogeboom, George W., 208 Professional Bldg.
Hoover, H. Lee, Jr., Holland Bldg.
Horst, Otto C., Medical Arts Bldg.
Horton, James D., Professional Bldg.
Huffman, Elston R., 407 Professional Bldg.
James, Joseph D., Professional Bldg.
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Johnson, William F., Medical Arts Bldg.
Johnston, Joseph L., 609 Cherry St.
Klingner, George M., 1630 N. Jefferson St.
Knabb, Arthur D., 1630 N. Jefferson St.
Knabb, Harris, 450 E. Commercial St.
Knabb, Henry F., 440 E. Commercial St.
Knabb, Henry F., Jr.. 1630 N. Jefferson St.
Knabb, Kenneth E., 1630 N. Jefferson St.
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Leidinger, Karl J., Republic
Lemmon, G. Bruce, Jr., Professional Bldg.
Lemmon, George B., Medical Arts Bldg.
Leslie, James F., 222 E. Commercial St.
Lockhart, Charles E., 432 Medical Arts Bldg.
Lowe, Horace A., 700 Medical Arts Bldg.
Lowe, Horace A., Jr., Medical Arts Bldg.
Maddux, William P., Professional Bldg.
Maher, Robert W., Medical Arts Bldg.
Marcus, Edward, Woodruff Bldg.
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Marshall, W. J., Professional Bldg.
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Meyer, Claude B., 410 McDaniel Bldg.
Morton, Paul C., 1508 E. Stanford St.
Musick, James D., Medical Arts Bldg.
Napper, Marvin L., Medical Arts Bldg.
O'Brien, James A., 630 E. Elm St.
Ormsbee, James L., 2013 N. National St.
Orr, Charles H., Ash Grove
Park, William I., Professional Bldg.
Peterson, Stanley S., Holland Bldg.
Pickens, E. Allen, Medical Arts Bldg.
Plumlee, William C., Holland Bldg.
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Powell, Edwin, M., Professional Bldg.
Rainwater, E. H., 430 South Ave.
Rigney, Levi M., 331 St. Louis St.
Rosen, Max, Medical Arts Bldg.
Sartin, John M., Medical Arts Bldg.
Schwartz, Eugene J., Professional Bldg.
Schweitzer, Fred C., Woodruff Bldg.
Sewell, Walter S., Professional Bldg.
Siceluff, Joseph G., 609 Cherry St.
Silsby, Don H., 326 Landers Bldg.
Silsby, Don James, 303 McDaniel Bldg.
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Smith, C. Souter, Holland Bldg.
Snead, Wm. H., Medical Arts Bldg.
Stahl, Fred A., Woodruff Bldg.
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Tarrasch, E. L., Woodruff Bldg.
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Webb, Leslie R., Jr., Professional Bldg.
White, R. Ned, Professional Bldg.
Williams, John W., Professional Bldg.
Williams, John W., Jr., 710 Landers Bldg.
Williams, Robert F., 710 Landers Bldg.
Wood, William W., Rochester, Minn.
Wooldridge, W. E., 100 Professional Bldg.
Yancey, Daniel L., Holland Bldg.

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HARRISON COUNTY
(Grand River Medical Society)

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Blackmore, Thomas A., Windsor
Douglas, Thomas H., Jr., Osceola
Galbreath, Jesse W., Urich
Hollinsworth, Ray S., Clinton
Hughes, Shelby B., Clinton
Jennings, Robert J., Windsor
Jordan, Ray B., Windsor
Smith, James O., Clinton
Thurber, Claude M., Windsor
Walker, George S., Clinton
Walker, Hugh B., Clinton
Wall, Harvey M., Windson
Woltzen, Samuel W., Urich

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(Dallas-Hickory-Polk County Medical Society)

HOLT COUNTY MEDICAL SOCIETY

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Kearney, Elmer F., Oregon
Perry, David C., Mound City

HOWARD COUNTY MEDICAL SOCIETY

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Dean, Francis D., Fayette
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Shaw, Wm. J., Fayette
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JACKSON COUNTY MEDICAL SOCIETY
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Adelman, Arthur, 909 Professional Bldg.
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Aisenstadt, E. Albert, 1030 Argyle Bldg.
Allebach, H. K., Research Hospital
Allen, Charles E., 712 Waldheim Bldg.
Allen, Charles H., First Natl. Bank Bldg., Independence
Allen, Robert E., 315 Nichols Rd.
Allen, Sylvia, 1010 Professional Bldg.
Allen, Wm. B., 424 Professional Bldg.
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Altomare, Edward P., 1030 E. Pacific
Altringer, A. N., 1622 Professional Bldg.
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Anderson, Raymond B., Plaza Time Bldg.
Anderson, Richard W., 21 W. 58th St.
Anderson, W. Connelly, 6416 Independence Ave.
Andrus, Bailey C., 233 Plaza Medical Bldg.
Arms, Arnold V., 231 Plaza Time Bldg.
Aschman, Theodore H., 1518 Professional Bldg.
Asher, A. Graham, 1220 Professional Bldg.
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Atwell, Floyd C., 411 Nichols Rd.
Aull, John, 1306 Professional Bldg.
Baer, Alvin J., 1404 Bryant Bldg.
Ball, James E., 1102 E. 47th St.
Ballard, Volney B., 1220 Professional Bldg.
Barelli, Pat A., 194 Plaza Time Bldg.
Barnett, Gordon P., 6333 Brookside Plaza
Barry, Gerald W., 3601 Troost Ave.
Barry, William B., 116 W. 47th St.
Baum, Frank E., 507 Professional Bldg.
Bay, Merrill R., Blue Springs
Beatty, Arch J., 1600 Professional Bldg.
Becker, Richard R., 4000 Baltimore Ave.
Bee, James E., 3520 Broadway
Beil, J. Wallace, 1102 Grand Ave.
Belaval, Gustavo S., 2018 Chester, Kansas City, Kan.
Bell, J. Vardiman, 209 Plaza Time Bldg.
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Benzing, Wm., Jr., 6832 Granade Lane, Mission, Kan.
Berger, Dan Langston, 1421 W. 50th St.
Bergmann, Victor H., 1120 Professional Bldg.
Bernreiter, Michael, 436 Professional Bldg.
Berry, Maxwell G., 315 Alameda Rd.
Biggs, Harry L., Raytown
Bills, Marvin L., 236 Plaza Time Bldg.
Birenboim, Irvin M., General Hospital
Black, Donald R., 924 Professional Bldg.
Black, Eugene C., 1228 Professional Bldg.
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Bohan, Peter T., Plaza Medical Bldg.
Boody, Robert J., Plaza Time Bldg.
Border, Charles T., 500 Gladstone Blvd.
Borenstine, Joseph, 121 W. 63rd St.
Boughnou, Harvey P., 315 Alameda Rd.
Bourke, Timothy S., 414 Argyle Bldg.
Boutros, Amin, 416 Argyle Bldg.
Bowser, John F., Plaza Time Bldg.
Brainard, Benjamine F., Martin City
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Brown, Irwin S., 230 Plaza Time Bldg.
Brown, Robert S., 830 Professional Bldg.
Broyles, Glen H., 1232 Professional Bldg.
Brumm, Lawrence W., 508 Wirthman Bldg.
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Buckingham, William, 314 Professional Bldg.
Buckner, Robert C., Professional Bldg.
Budke, Harold A., Argyle Bldg.
Buhler, Victor B., General Hospital
Bunting, Williston P., 1622 Professional Bldg.
Burns, Beryl I., General Hospital
Burn, Jonathan E., Charles Town, W. Va.
Byers, Philip L., 315 Alameda Rd.
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Campbell, Frederick B., 1210 Professional Bldg.
Capell, Clarence S., 1135 Rialto Bldg.
Carbaugh, Glenn C., 2004 Bryant Bldg.
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Carmichael, F. A., Jr., 320 W. 47th St.
Carrier, Edson C., 315 Alameda Rd.
Casebolt, Milton B., 4000 Baltimore St.
Casford, Ralph S., 315 Alameda Rd.
Castelaw, Rush E., 3731 Locust St.
Castles, John E., 1002 Argyle Bldg.
Cavaness, E. W., Leucadia, Calif.
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Chapman, Samuel B., 830 Argyle Bldg.
Cheeseman, Wm. B., 530 Professional Bldg.
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Clasen, Arthur C., 1430 Professional Bldg.
Coburn, Donald F., 221 Plaza Time Bldg.
Cochrane, Joseph J., 200 Plaza Medical Bldg.
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Coffin, Theodore A., 911 Waldheim Bldg.
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Advertisement



From where I sit *by* Joe Marsh

Jiggs Gets Four "Hot-Foots"

Cappy Miller's bought himself a new car. We won't be seeing his old jalopy bouncing over the back roads any more. I'm going to miss it, too.

Many a morning Cappy and I drove off in that rattletrap for a day's hunting or fishing. We'd pile rods or guns in back, and prop open the trunk compartment—so Jiggs, Cappy's pointer, could jump in and go along.

They say when Cappy brought the new car home he opened up the hood to show off the engine—and poor old Jiggs hopped right in! Figured it was the trunk. He hopped right out in a hurry, too. That cylinder head was mighty hot.

From where I sit, old habits are hard to shake, once they get a hold. For instance, too many people are still in the habit of trying to run their neighbors' lives—telling them how to act, how and where to practice their profession, whether or not to enjoy a glass of beer. I say that kind of thinking's outmoded . . . ought to be turned in for a new model!

Joe Marsh

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Cortner, Mary C., 3102 Troost Ave.
Counsell, Chester M., 708 W. 17th St.
Cowherd, Joseph B., 6247 Brookside Blvd.
Cox, Kenneth E., 320 W. 47th St.
Culbertson, Wm. F., V. A. Hospital, Springfield
Cummins, Walter F., 1612 Professional Bldg.
Curran, Edward J., 1805 Federal Reserve Bank Bldg.
Curran, Kevin E., 1805 Federal Reserve Bank Bldg.
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Davis, Jack M., Raytown
Davis, John J., 1010 Professional Bldg.
Davis, Kenneth A., 231 W. 47th St.
Davis, Robert C., 820 Professional Bldg.
DeMaria, Peter F., St. Joseph Hospital
DeMott, Jack D., 2625 W. Paseo
DeMotte, John Allan, 315 Alameda Rd.
Dennie, Charles C., 1524 Professional Bldg.
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Dimond, Edgar A., General Hospital
Diveley, Rexford L., 4312 Mill Creek Parkway
Dixon, Otto Jason, 1617 Professional Bldg.
Dixon, V. L., 2204 E. 18th St.
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Dodge, Mark, 231 Plaza Time Bldg.
Donaldson, J. Earle, 300 E. 12th St.
Dorsch, Ervin H., Independence Sanitarium, Independence
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Draney, Thomas E., Argyle Bldg.
Draney, Thomas L., 308 Argyle Bldg.
Drisko, Robert M., 1500 Professional Bldg.
Duer, Mildred C., 300 W. 47th St.
Dugay, Harry W., 1401 Prospect Ave.
Duncan, Ralph E., 909 Argyle Bldg.
Duncan, Wm. H., 1200 Professional Bldg.
Dwyer, Frank X., Plaza Time Bldg.
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Enna, Carl, 1200 Professional Bldg.
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Eubank, Ambrose E., 1102 Grand Ave.
Eubank, Dillard M., Raytown
Eubank, William R., 1404 Bryant Bldg.
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Forman, Louis H., 704 Bryant Bldg.
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Frankl, George, 1020 McGee St.
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Gard, Raymond F., 604 W. Maple, Independence
Garrison, Roy F., Argyle Bldg.
Gaskins, John H., 520 Professional Bldg.
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Gestring, Hugh A., 303 Wirthman Bldg.
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Gibson, Edward T., 1228 Professional Bldg.
Gilkey, Harry M., 1624 Professional Bldg.
Gilles, Clifford L., 1414 Professional Bldg.
Gilliland, Oliver S., 814 Professional Bldg.
Gillmor, Charles S., 1226 Rialto Bldg.
Ginsberg, A. Morris, 420 Professional Bldg.
Ginsberg, Norman A., 322 Professional Bldg.
Gist, Wm. L., 108 E. 65th St. Ter.
Gist, Wm. W., 800 Professional Bldg.
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Goldman, Stanley L., 2208 Bryant Bldg.
Goodman, Leroy, Plaza Time Bldg.
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Graham, James W., 518 Argyle Bldg.
Graham, Wallace H., White House, Washington, D. C.
Grauerholz, James W., 206 Congress Bldg.
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Griffith, John K., Independence Sanitarium, Independence
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Guffey, Don Carlos, 717 Professional Bldg.
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Hall, Thomas B., 902 Professional Bldg.
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Harrington, G. Leonard, 1124 Professional Bldg.
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Haynes, Lee, 901 Westport Rd.
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Hess, Paul D., 8423 High Dr.
Hibbard, Blaine Z., Plaza Time Bldg.
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Hink, Frederick W., 10235 Independence Rd.
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Holbrook, Walter F., 1132 Professional Bldg.
Hollweg, Kenneth C., 612 Bryant Bldg.
Holton, Edward B., First Natl. Bank Bldg., Independence
Hook, Waller C., 510 Professional Bldg.
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Hoxie, George H., Berkeley, Calif.
Hughes, Gerald E., 1107 Bryant Bldg.
Hungate, Carroll P., 934 Argyle Bldg.
Hunt, Claude J., 1612 Professional Bldg.
Hunter, Martin P., 1408 Waldheim Bldg.
Hurwitt, Frank, 400 Professional Bldg.
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Irland, Robert D., Union Station Hospital
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Johnson, Thomas M., 300 W. 47th St.
Johnstone, Paul N., 1110 Bryant Bldg.
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Jones, Kneeland P., 1108 Troost Ave.
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Juarez-Reyna, Guillermo, 928 Professional Bldg.
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Kaul, Philip G., Plaza Time Bldg.
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Keeler, James E., 4301 Main St.
Keeling, Irene C., 822 W. 57th St.
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Kent, Clifford F., 1306 Bryant Bldg.
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Kienberger, Paul A., St. Joseph Hospital
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Kitchen, Wm. M., 1010 Rialto Bldg.
Klein, Edward H., 200 Plaza Medical Bldg.
Klepinger, Dayton P., 500 Argyle Bldg.
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Knight, Lyle B., 8 W. 3rd St., Lees Summit
Knoch, H. Kermit, 612 Professional Bldg.
Knox, Andrew C., 608 Shukert Bldg.
Koehler, Charles A., 511 Wirthman Bldg.
Koenig, Frank J., 1418 Professional Bldg.
Kohn, Cecil M., 630 Professional Bldg.
Korth, William M., 612 Professional Bldg.
Kovitz, Louis, 1440 Professional Bldg.
Kraft, Jacob, 1612 Professional Bldg.
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Laffoon, France L., Raytown
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Lee, George C., 1630 Professional Bldg.
Lehner, Richard L., 406 Bryant Bldg.
Leifer, William W., 505 Professional Bldg.
Leitch, Cecil G., 1109 Professional Bldg.
Leitz, Frank B., 1530 Professional Bldg.
Lemoine, Albert N., Plaza Time Bldg.
Leonard, Ward H., 5838 Charlotte St.
Levey, Harry B., 200 Argyle Bldg.
Lewis, Revis C., Plaza Time Bldg.
Lewis, William E., 4435 Harrison St.

Lichtor, Alexander, 330 Professional Bldg.
Lieberman, B. Albert, 1002 Professional Bldg.
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Lilly, Terry E., 807 Argyle Bldg.
Lilly, Terry E., 807 Argyle Bldg.
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Linville, Howard E., St. Joseph Hospital
Littauer, David, Menorah Hospital
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Lockwood, Ira H., 830 Argyle Bldg.
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Long, Robert S., 4800 E. 24th St.
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Lundgren, Fred H., 7231 Wyandotte
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McAlester, A. W., III, 2003 Bryant Bldg.
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McCarthy, Wm. F., 313 S. Liberty, Independence
McClanahan, Robert C., 820 Professional Bldg.
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McCoy, Frederick J., 1500 Professional Bldg.
McCubbin, Clarence R., 400 Professional Bldg.
McCullough, Campbell C., Argyle Bldg.
McCunniff, Wm. B., Argyle Bldg.
McDonald, Bruce P., 2604 Prospect Ave.
McDonnell, John F., Plaza Medical Bldg.
McFarland, M. D., Plaza Medical Bldg.
McHale, Thomas C., 4620 Independence Ave.
McKee, Joseph W., 1332 Professional Bldg.
McLean, Harry A., Sultan, Wash.
McLeod, John, 636 Argyle Bldg.
McMillan, Thomas E., 1019 Professional Bldg.
McPhee, Wm. R., 1109 Professional Bldg.
McPherson, Owen P., 1424 Professional Bldg.
McVay, James R., 814 Porter Bldg.
McVay, James R., Jr., 814 Porter Bldg.
MacInnis, Florence E., 618 Professional Bldg.
Maclean, John A., Los Angeles, Calif.
Major, Hermon S., 3100 Euclid Ave.
Mantz, Herbert L., 618 Professional Bldg.
Marks, Mark M., 332 Professional Bldg.
Marshall, Cameron F., Plaza Theatre Bldg.
Marty, Loraine A., Lakeview Heights
Mathewson, Hugh S., 2105 W. 42nd St.
Mayer, John H., Jr., 618 Professional Bldg.
Melgaard, S. Ross, 6831 Cherry St.
Meyer, Paul W., Professional Bldg.
Miles, George Oliver, 411 Alameda Rd.
Miller, Clinton L., 8 W. 3rd St., Lees Summit
Miller, Gerald L., 730 Professional Bldg.
Miller, Hugh, 40 E. 55th St.
Miller, Wade Hampton, 305 Professional Bldg.
Miller, Walter P., 800 Argyle Bldg.
Mitchell, Robert H., 410 Bryant Bldg.
Mixson, Wm. C., 320 W. 47th St.
Monahan, Elmer P., 814 Argyle Bldg.
Montgomery, James G., 1332 Professional Bldg.
Mooney, Justin L., 1420 Bryant Bldg.
Mooney, Marcel L., 1420 Bryant Bldg.
Moore, Louis T., Long Beach, Calif.
Moore, Robert A., 106 W. 14th St.
Moorhead, Jay O. C., Vallejo, Calif.
Morest, F. Stanley, 1512 Professional Bldg.
Morgan, David B., 1216 Professional Bldg.
Morrow, Raymond L., 424 Professional Bldg.
Moss, Paul, 1306 Bryant Bldg.
Mueller, Martin J., 934 Argyle Bldg.
Mueller, Ralph E., 600 Professional Bldg.
Mullen, Leo M., 3548 Indiana Ave.
Mundy, Wm. L., 420 Professional Bldg.
Murphy, Jerome P., 5224 Sycamore Dr., Mission, Kan.
Murphy, Robert J., 4301 Main St.
Myers, John L., 815 Shukert Bldg.
Myers, John Simeon, 815 Shukert Bldg.
Myers, Ralph R., U. S. Naval Hospital, Bremerton, Wash.
Myers, Robert M., 1025 Rialto Bldg.
Myers, Wilson A., 815 Shukert Bldg.
Needels, Orval T., 7400 Wornall Rd.
Nelson, Charles S., 3626 Independence Ave.
Nickson, Charles E., Jr., First Natl. Bank Bldg.
Nicolay, Kenneth S., Plaza Medical Bldg.
Niedermeyer, Fred P., St. Joseph Hospital
Nigro, Dominic M., 925 Argyle Bldg.
Nigro, E. Robert, address unknown
Nigro, Joseph Albert, 925 Argyle Bldg.
Noltensmeyer, Milton N., General Hospital
Nunn, Pat Morris, 524 Southwest Blvd., Kansas City, Kan.
O'Brien, Leo A., 1002 Argyle Bldg.
O'Brien, Raymond W., Plaza Theatre Bldg.
Ockerblad, Nelse F., Plaza Time Bldg.
O'Connell, P. J., 327 Argyle Bldg.
Ogilvie, John H., 730 Professional Bldg.
Oglevie, Rial R., 522 Professional Bldg.
O'Neil, James H., 424 Professional Bldg.
Osgood, George M., 915 Professional Bldg.
Owens, Graham J., 1034 Rialto Bldg.
Owens, Hugh H., 1034 Rialto Bldg.
Owens, Michael J., 1034 Rialto Bldg.
Owens, Robert H., 1034 Rialto Bldg.
Padfield, Earl G., 1500 Professional Bldg.
Pakula, Sidney F., Plaza Time Bldg.
Pallett, Harold A., 1132 Professional Bldg.
Parker, Elmer L., 3420 Troost Ave.
Parker, Hubert M., 520 Argyle Bldg.
Parker, Joseph W., Jr., 200 E. 56th St.
Parsons, Eugene O., 315 Alameda Rd.
Passman, Harold, Professional Bldg.
Pearson, Paul E., 1025 Rialto Bldg.
Peete, Don Carlos, 1500 Professional Bldg.
Pendleton, George F., 933 Professional Bldg.
Perll, Maurice F., 300 E. 12th St.
Perll, Rita D., 4711 Central
Perry, Ralph, 4800 E. 24th St.
Peterson, Carl M., 2462 Brooklyn Ave.
Peterson, Milton C., 400 Professional Bldg.
Peterson, Walter R., 2462 Brooklyn Ave.
Petry, Ezra L., Argyle Bldg.
Pfuetze, Edwin L., 1424 Professional Bldg.
Pickard, Nicholas S., Plaza Time Bldg.
Pickens, Edgar E., 4826 Roanoke Pkwy.
Pierron, John B., 5324 Clark Dr., Kansas City, Kan.
Piper, Donald K., 511 Wirthman Bldg.
Pipkin, F. Garrett, 316 Argyle Bldg.
Pittam, Jesse T., 636 W. 57th St.
Pittam, Radford F., 830 Professional Bldg.
Platt, Paul C., 1614 City Hall
Polk, George M., Lees Summit
Pollock, Leo H., 1310 Bryant Bldg.
Poorman, Bert A., 2836 Prospect Ave.
Porter, Louis, 400 Professional Bldg.
Potter, Lee G., 724 Professional Bldg.
Powell, Benson M., Research Hospital
Powers, John M., 3304 Linwood
Preston, Albert, Jr., 1010 Professional Bldg.
Prentiss, Harry S., 900 Rialto Bldg.
Price, Edward B., Jr., General Hospital
Printz, Joseph H., 1025 Professional Bldg.
Printz, Otto J., 229 Ward Pkwy.
Putnam, John A., Plaza Theatre Bldg.
Quistgard, Paul C., 6741 Prospect
Rader, Ada Brainard, Martin City
Ragan, Romulus C., 404 W. 75th St.
Ramos, John F., Jr., 2462 Brooklyn Ave.
Rannie, Paul R., Independence
Rees, William J., 624 E. 63rd Ter.
Reinhardt, George R., 805 9th A. U. APO 1052, San Francisco
Reitz, Carl H., 404 W. 75th St.
Remley, George C., 832 Argyle Bldg.
Rhoades, Arthur B., 2300 W. 51st St.
Richardson, Marion W., 2204 E. 18th St.
Riller, Lowell E., Professional Bldg.
Rinkel, Herbert J., 2005 Bryant Bldg.
Rising, Jesse D., 814 Professional Bldg.
Roberts, Harold M., 1530 Professional Bldg.
Roberts, Sam E., 1110 Professional Bldg.
Robertson, James A., 708 W. 48th St.
Robinson, Ernest Kip, 928 Professional Bldg.
Robinson, G. Wilse, 2625 Paseo
Robinson, G. Wilse, Jr., 2625 Paseo
Rodgers, Samuel U., 2462 Brooklyn Ave.
Rose, Charles Wm., 103 N. Elmwood
Roy, Gustave A., Camp Pendleton, Oceanside, Calif.
Rubbra, Jean O., 5050 Oak St.
Rubin, Sidney, Menorah Hospital
Rubnitz, Leon H., 400 Professional Bldg.
Rufe, Jack R., General Hospital
Saferstein, A. Lester, 6859 Cherry St.
Saladino, Anthony, 1040 Argyle Bldg.
Samson, Ralph B., 1210 Professional Bldg.
Samuelson, Edward A., 2603 E. 31st St.
Sanders, Wm. F., Professional Bldg.
Saunders, Everett L., 121 W. Lexington, Independence
Scarpellino, Louis A., 36 E. 52nd St.
Schaefer, Charles L., 3937 Main St.
Schaerrer, Hans, 1115 Grand Ave.
Schaerrer, Wm. C., 1210 Professional Bldg.
Schaffer, Richard G., 827 W. 60th St.
Schauffler, Robert M., 518 W. 10th St.
Schiffmacher, Jack E., 700 Professional Bldg.
Schorer, Edwin H., 1910 W. 56th St.
Schultz, Loraine E., 1025 N. 22nd St.
Schutz, Carl Bryant, 320 W. 47th St.
Schutz, Richard S., Plaza Time Bldg.
Seely, Clark W., Plaza Time Bldg.
Sewell, Minor F., 1722 W. 39th St.
Shapiro, Lazare M., 628 Professional Bldg.
Shears, Robert N., St. Joseph Hospital
Sheldon, John G., 604 Commerce Bank Bldg.
Sheldon, John, Jr., Vineyard Park Hospital
Sheldon, Russell D., Research Hospital
Sherwood, Lorraine, 4000 Baltimore
Shofstall, Charles K., 300 W. 47th St.
Schofstall, Wm. H., 300 W. 47th St.
Shuey, Herbert H., 3903 Brooklyn
Shumate, David L., 500 Argyle Bldg.
Shypper, Moses J., 1115 Grand Ave.
Silvers, Alvin, 1702 Southwest Blvd.
Simpson, Morris B., 1408 Professional Bldg.
Sinclair, A. B., 4711 Central St.
Singleton, J. Milton, 315 Alameda Rd.
Skinner, E. H., 1532 Professional Bldg.
Skinner, John O., 1402 Bryant Bldg.
Skinner, John T., 1402 Bryant Bldg.
Skoog, Andrew L., 919 Rialto Bldg.
Slentz, Wm. A., Plaza Medical Bldg.
Slusher, Ernest W., 806 Rialto Bldg.
Small, Walter L., Hyde Park Hotel
Smith, Arthur B., 830 Argyle Bldg.
Smith, Ira T., 1019 Professional Bldg.
Smith, James D., 318 Professional Bldg.
Sneid, Philip, 1828 Walnut
Snider, Sam H., 315 Alameda Rd.
Soderberg, N. B., Brook Army Medical Center, San Antonio, Tex.
Sophian, Abraham, 1405 Bryant Bldg.
Spafford, Allen L., 1030 Argyle Bldg.
Stadnik, Louis J., Tobian, Nebr.
Staggs, Wm. A., 822 Argyle Bldg.
Staley, Harry R., 1308 Bryant Bldg.
Stapp, Roth V. A., Tyler, Texas
Statland, Harry, 1406 Bryant Bldg.
Statland, Morris, 1406 Bryant Bldg.
Steffen, Lawrence F., 1220 Professional Bldg.
Stockwell, A. Lloyd, 600 Professional Bldg.
Stratemeier, Edward H., General Hospital
Strong, Richard M., Smithville
Summers, Caldwell B., Plaza Theatre Bldg.
Swisher, Robert C., 5509 Brookside
Switzer, Clyde, Grandview
Tabris, Julius A., 405 Argyle Bldg.
Tarson, Solomon S., 3221 Troost Ave.
Tasker, Charles B., 730 Professional Bldg.
Teachenor, Frank R., Plaza Time Bldg.
Teall, Raymond E., 1016 Professional Bldg.
Tesson, James A., 907 Rialto Bldg.
Theel, Otto W., Jr., 123 E. 39th St.
Thiele, George H., 6526 High Dr.
Thiessen, Edward H., 411 Alameda Rd.
Thomas, Miles E., Fitzsimmons Hospital, Denver, Colo.
Thomason, Henry E., 1132 Professional Bldg.
Thorn, Druery R., 1107 Bryant Bldg.
Treharne, Frank E., 171 W. Walnut, Independence
Trimble, Wm. K., 834 Professional Bldg.
Trippe, Harrison C., 1014 Argyle Bldg.
Trowbridge, Barnard C., Plaza Medical Bldg.

Trowbridge, Ellsworth H., 1905 Bryant Bldg.
Trowbridge, Ellsworth H., Jr., 1905 Bryant Bldg.
Turner, Percy C., 1433 E. 19th St.
Tuthill, Herbert, 1211 Rialto Bldg.
Tuttle, Floyd W., Blue Springs
Twin, Edward J., 630 Professional Bldg.
Twyman, Elmer D., 750 W. 47th St.
Twyman, Richard A., 1314 Professional Bldg.
Underwood, Dick H., 1107 Bryant Bldg.
Underwood, Harry A., 4712 E. 24th St.
Underwood, Johnson, Jr., 1600 Professional Bldg.
Underwood, Ross H., 1107 Bryant Bldg.
Unger, Harold, 1300 Bryant Bldg.
Upsher, Albert E., Blue Springs
Valentine, Herbert S., 1124 Professional Bldg.
Van Biber, James T., 317 W. Kansas, Independence
VanDel, Dwight T., 909 Professional Bldg.
Vanorden, Herbert F., 6710 Edgevale Rd.
Vilmer, Charles, 1216 Professional Bldg.
Vincent, Jack C., 420 Professional Bldg.
Virden, C. Edgar, 700 Professional Bldg.
Virden, Herbert H., 700 Professional Bldg.
Wade, Frederick E., Professional Bldg.
Wakefield. Franklin, Jr., 2004 Bryant Bldg.
Walker, James C., 1424 Professional Bldg.
Walker, John W., 830 Argyle Bldg.
Wall, Arthur H., Sierra Madre, Calif.
Wall, Harry C., Argyle Bldg.
Wallace, Frank B., Rialto Bldg.
Walthall, Damon O., 315 Alameda Rd.
Watson, B. Frank, 1808 Harvard Ave., Independence
Watson, Ethel, First Natl. Bank Bldg., Independence
Watson, James Donald, 209 S. Nevada, Colorado Springs, Colo.
Waxman, David, 3802 Prospect
Waxman, Jane Zabel, 4802 Prospect
Webster, Joseph G., 612 Professional Bldg.
Weiford, Edward C., 1000 Professional Bldg.
Welker, Joseph E., 834 Professional Bldg.
Wheeler, John H., 411 Alameda Rd.
White, Charles H., 4125 Brookridge, Mission, Kan.
White, Edwin C., 1032 Professional Bldg.
White, George A., 729 Shukert Bldg.
White, Stoughton F., 1600 Professional Bldg.
Whiteman, John R., 6314 Brookside Plaza
Whitman, Doyle C., 1003 Sharp Bldg.
Wien, Irving A., 321 Argyl Bldg.
Wilkinson, Everett A., 1332 Professional Bldg.
Williams, Delon A., 806 Professional Bldg.
Williams, Joseph C., Jr., 510 Professional Bldg.
Williams, Luke E., 2201 E. 27th St.
Williams, Robert A., 5400 St. John Ave.
Williams, Vincent T., 836 Argyl Bldg.
Willits, Lyle G., 1515 Professional Bldg.
Willoughby, Jean B., 1032 Professional Bldg.
Wilson, Clifford C., 710 Professional Bldg.
Wilson, Fernando I., 116 W. 47th St.
Wilson, Hester J., 233 Plaza Time Bldg.
Winkelman, Esther B., 4050 Broadway
Winston, Bernard H., Bryant Bldg.
Wise, George W., Plaza Time Bldg.
Withers, Orval R., 1418 Bryant Bldg.
Wolf, Jack W., 206 Argyl Bldg.
Wood, Laurence E., Plaza Time Bldg.
Woods, Harold V., 121 W. Lexington, Independence
Wortmann, Robert F., 510 Professional Bldg.
Wright, R. Paul, 1324 Professional Bldg.
Wu, William Q., 215 Argyl Bldg.
Yazel, Herman E., 733 Rialto Bldg.
Young, Jesse W., 1401 Southwest Blvd., Kansas City, Kan.
Zellermayer, Jacob, 609 Professional Bldg.
Ziegler, Allen M., 320 W. 47th St.
Zoglin, Nathan M., 927 Argyl Bldg.
Zuber, Harold V., 600 Professional Bldg.

JASPER COUNTY MEDICAL SOCIETY
(Joplin)

Alberty, Omer L., Carl Junction
Birsner, Frank H., Carthage
Black, Mervin H., 516 Frisco Bldg.
Blanke, Otto T., 725 Frisco Bldg.
Blankenship, George W., Anderson
Bragdon, George H., Reeds
Burch, John E., 804 Frisco Bldg.
Butterworth, Nelson S., 410 Jackson
Byrd, Homer E., Carthage
Clinton, Lloyd B., Carthage
Coates, Charles C., Frisco Bldg.
Coombs, Miller O., 930 N. Moffitt
Craig, Irwin T., 409 N. Pearl
Craig, Wm. E., Moberly
Crawford, Archie L., 631 Frisco Bldg.
Curl, Howard, 622 Frisco Bldg.
DeTar, Burleigh E., 410 Jackson St.
DeTar, B. E., Jr., 410 Jackson St.
Douglas, John W., 210 W. 32nd St.
Douglass, Daniel D., Frisco Bldg.
Douglass, Jesse E., Webb City
Eliscu, Juliette, Frisco Bldg.
Ferguson, Robert L., Frisco Bldg.
Ferguson, Robert M., Webb City
Grantham, S. A., Jr., 420 Byers
Hall, Marvin F., 622 Frisco Bldg.
Hamilton, Eugene H., 325 Frisco Bldg.
Harris, Russell D., Oklahoma City, Okla.
Holtzman, Samuel, 811 Frisco Bldg.
Hornback, Edward R., 215 Frisco Bldg.
Howard, Walter M., 301 Frisco Bldg.
Hurst, W. W., National Bank Bldg.
Isbell, Charles H., Carthage
James, Edward D., 826 Frisco Bldg.
James, Robert M., 504 Jackson
Jeans, Virgil, National Bank Bldg.
Johnson, Edward E., Norton, Kan.
Kenney, Verna E., Miners Bank Bldg.
Kiehl, Katharine, DeTar Clinic
Kirschman, Robert E., 215 Frisco Bldg.
Koehler, John W., Frisco Bldg.
Kuhn, John R., Jr., 321 Frisco Bldg.
Laney, Ronald L., 607 Main St.
Leaming, Harry A., 421 N. Joplin
McIntire, Emery J., Carthage
McNew, William T., Carthage
McPike, Lloyd H., 607 Frisco Bldg.
Mack, Mary L., 602 N. Byers
Maddox, John D., 528 Pearl St.
Meredith, Guy I., Frisco Bldg.
Mitchell, Ernest, 607 Main St.
Myers, Roy E., Frisco Bldg.
Neff, Robert L., 503 Frisco Bldg.
Paddock, Charles S., Frisco Bldg.
Papp, Sandor D., Frisco Bldg.
Poor, Carl W., Diamond
Post, Winfred L., 617 Joplin St.
Powers, Everett, Carthage
Reid, Charles T., Frisco Bldg.
Rosenthal, Frances E., 724 Frisco Bldg.
Saylor, Robert K., 2801 E. 12th St.
Schoeberl, C. B., Frisco Bldg.
Schulte, G. A., 622 Main St.
Scorse, Sidney W., Frisco Bldg.
Simmons, Leroy, Sarcoxie
Sims, John L., 605 Frisco Bldg.
Slentz, E. L., 410 Jackson Ave.
Smith, Rolant T., 821 Frisco Bldg.
Smith, Wm. Russell, Carthage
Stormont, Riley M., Webb City
Sutphin, John B., 631 Frisco Bldg.
Van Urk, Jules B., Carthage
Walker, Paul W., Frisco Bldg.
Webster, Roger W., San Jose, Calif.
Werner, Franklin C., 522 Professional Bldg.
Whitten, M. Foster, Carthage
Wilbur, Herbert L., 617 Empire
Wilson, Alice H., 1907 Harlem Ave.
Wood, George H., Carthage
York, Wm. Bransford, Sarcoxie

JEFFERSON COUNTY MEDICAL SOCIETY

Bolgar, Bartholomew, Festus
Commerford, James J., Cyrstal City
Dobbins, Thomas, Hillsboro
Donnell, Harold E., DeSoto
Donnell, Robert H., Crystal City
Donnell, Thomas A., DeSoto
Edwards, T. Burton, Cedar Hill
Fallet, Charles E., DeSoto
Frerichs, John B., San Francisco, Calif.
McKinstry, Karl V., DeSoto
Reich, Oliver F., Kimmswick
Rutledge, John F., Crystal City
Schulein, Vernon E., Crystal City
Senn, Emmett J., Herculaneum
Sum, Othmar J., Barnhart
Yoskit, Harry, Festus

JOHNSON COUNTY MEDICAL SOCIETY

Cooper, R. Lee., Warrensburg
Damron, Oscar H., Warrensburg
Grove, Culph W., Knob Noster
Harkness, Harry, Warrensburg
Johnson, Charles S., Warrensburg
Lederer, Charles M., Warrensburg
McKinney, Ralph F., Warrensburg
Maxson, T. Reed, Warrensburg
Parker, Harry F., Warrensburg
Patterson, Wm. R., Warrensburg
Rawlins, Kelly, Holden
Thompson, Wm. G., Holden
Wilcox, Winton W., Warrensburg

KNOX COUNTY
(North Central Counties Medical Society)

LACLEDE COUNTY MEDICAL SOCIETY

Carlton, Charles E., Stoutland
Carrington, Howard W., Lebanon
Casey, Shederic A., Lebanon
Cramer, Quentin, General Hospital, Kansas City
Fisher, George E., Lebanon
Froelich, Rae W., 7321 Overbrook Dr., St. Louis
Harrell, R. E., Lebanon
Hope, James L., Lebanon
Hurst, Ben B., Lebanon
Jenkins, Paul A., Lebanon
Lindsay, John W., Conway
Peckham, John W., Koch Hospital, Koch
Summers, Jacob H., Lebanon

LAFAYETTE COUNTY MEDICAL SOCIETY

Best, Robert, Higginsville
Brady, Hugh S., Concordia
Braecklein, Wm. A., Tucson, Ariz.
Brasher, Ben H., Lexington
Bumgarner, James E., Higginsville
Kelling, Douglas G., Waverly
Kellings, George A., Waverly
Kelling, Jordan, Waverly
Koppenbrink, W. E., Jr., Higginsville
Lissack, Edmund, Concordia
Liston, Odus, Oak Grove
Martin, Wilfred E., Odessa
Miller, J. P., Lexington
Moore, Ernest M., Higginsville
Niebet, Eliga B., Odessa
Ryland, C. T., Lexington
Schooley, R. C., Odessa
Ward, Joe, Lexington
Williams, John W., Oak Grove
Willis, John B., Mayview

LAWRENCE COUNTY
(Ozarks Medical Society)

LEWIS-CLARK-SCOTLAND COUNTIES MEDICAL SOCIETY

Bridges, J. R., Kahoka
Davis, Landis Y., Canton
Ellery, William L., LaGrange
Jennings, P. W., Canton

LINCOLN COUNTY MEDICAL SOCIETY

Creech, Joseph C., Troy
Damron, Edward O., Elsberry
Harris, Harold S., Troy
Hicks, Edward A., Troy
Penn, Robert M., Silex

LINN COUNTY
(Grand River Medical Society)

LIVINGSTON COUNTY
(Grand River Medical Society)

McDONALD COUNTY
(Unorganized)

MACON COUNTY
(Chariton-Macon-Monroe-Randolph County Medical Society)

MADISON COUNTY
(Mineral Area County Medical Society)

MARIES COUNTY
(Unorganized)

MARION-RALLS COUNTY MEDICAL SOCIETY
(Hannibal)

Birney, Wm. P., 1003 Broadway
Brown, John E., Perry

Mid-South Postgraduate Medical Assembly

February 12, 13, 14, 15, 1952

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HOTEL PEABODY

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Dr. Russell J. Blattner,	Prof. of Pediatrics, Baylor University, College of Medicine
Dr. Edward L. Bortz,	Asso. Prof. of Medicine, University of Pennsylvania
Dr. Richard D. Bryant,	Asst. Prof. of Obstetrics, University of Cincinnati
Dr. Henry N. Harkins,	Prof. of Surgery, University of Washington
Dr. Edw. C. Hughes,	Prof. of Obstetrics & Gynecology, Uni. of Syracuse, College of Med.
Dr. Wm. K. Keller,	Prof. of Psychiatry, University of Louisville
Capt. W. E. Kellum,	Commanding Officer, Naval Medical Research Institute, Bethesda, Md.
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Dr. John S. Lundy,	Prof. of Anesthesiology, Mayo Foundation Grad. School, Uni. of Minn.
Dr. Champ Lyons,	Prof. of Surgery, Medical College of Alabama
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Dr. Wm. H. Olmsted,	Asso. Prof. Clinical Medicine, Washington University
Dr. Louis M. Orr,	Orlando, Florida. Urology
Dr. Algernon B. Reese,	Asso. Prof. of Ophthalmology, Columbia University
Dr. Herbert E. Schmitz,	Prof. of Obstetrics & Gynecology, Loyola University (Chicago)
Dr. Harris B. Shumacker,	Prof. of Surgery, Indiana University
Dr. Lowell D. Snorf,	Prof. of Medicine, Northwestern University
Dr. Don C. Sutton,	Prof. of Medicine, Northwestern University
Dr. O. B. Van Alyea,	Clinical Prof. of Otolaryngology, University of Illinois
Dr. Lawson Wilkins,	Asso. Prof. of Pediatrics, Johns Hopkins Hospital
Dr. Lawrence E. Young,	Asst. Prof. of Medicine, University of Rochester (New York)

For further information on hotel reservations write

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Secretary
869 Madison Avenue **Memphis, Tennessee**

Burns, Francis R., 226 Broadway
Canella, John M., 1001 Broadway
Chilton, James C., 500 Broadway
Francka, W. F., 228 Broadway
Goodrich, Howard B., Trust Bldg.
Greene, Harry L., Holmes Bldg.
Hamlin, Wyeth, Palmyra
Hardesty, Joel W., Holmes Bldg.
Hopson, George, Monroe City
Hornback, George A., 500 Broadway
Kibbe, John H., Monroe City
Landau, Daniel B., 228 Broadway
Lanning, Robert J., 228 Broadway
Levine, Ervan L., Vandalia
Lucke, Eugene M., Court House
Malley, John A., Quincy, Ill.
Motley, Elliot R., Kinderhook, Ill.
Murphy, Bernard L., 100 N. 6th St.
Norton, Harry B., 110 N. 6th St.
Pipkin, Walter D., Monroe City
Reichman, John J., 1001 Broadway
Roller, Merrill J., 228 Broadway
Walyer, Charles E., Marshall
Smith, Ulysses S., Trust Bldg.
Smith, Wm. J., Trust Bldg.
Sultzman, Francis E., 115 N. 5th St.
Wachowiak, Marion, St. Joseph
Walterschied, John H., 508 Broadway
Well, J. W., Palmyra

MERCER COUNTY
(Grand River Medical Society)

MILLER COUNTY MEDICAL SOCIETY

Allee, W. L., Eldon
Buehler, Carl T., Jr., Eldon
Shelton, Edward O., Eldon

MINERAL AREA COUNTY MEDICAL SOCIETY

(St. Francois-Iron-Madison-Washington-Reynolds-Ste. Genevieve Counties)

Appleberry, C. H., Flat River
Appleberry, Dailey, River Mines
Aubuchon, W. E., Leadwood
Bugg, Andrew F., Ellington
Bull, Ben M., Ironton
Clapsaddle, Clare J., Ste. Genevieve
Cline, Harold H., Piedmont
Cresswell, George F., Potosi
Crouch, F. Richard, Farmington
Evans Albert L., Bonne Terre
Farrar, C. B., Flat River
Foster, Jack L., Desloge
Gaebe, Harold C., Desloge
Gale, Frank W., Bismarck
Gay, George, Ironton
Grossman, Marvin, Fredericktown
Harland, R. E., Ironton
Haw, Marvin T., Bonne Terre
Hoctor, Emmett F., Farmington
Hunt, John W., Jr., Leadwood
Jones, Paul L., Flat River
Knotts, H. S., Farmington
Lanning, R. C., Ste. Genevieve
Lanning, Robert W., Ste. Genevieve
Lanzafame, S. Anthony, Farmington
Martin, James H., Ironton
Pyrtle, James R., Centerville
Roebber, Harry M., Bonne Terre
Sexauer, Arthur E., Ste. Genevieve
Slaughter, Shelby C., Fredericktown
Stout, James J., Farmington
Sutton, Charles E., 9552 Park Lane, Ladue
Taylor, Byron H., Flat River
Taylor, Van W., Bonne Terre
Thurman, Joseph L., Potosi
Watkins, George L., Farmington
Watkins, George L., Jr., 109 Clinton Dr., Columbia

MISSISSIPPI COUNTY MEDICAL SOCIETY

Davis, Wilbur L., Charleston
Dernoncourt, John E., Charleston
Marshall, A. H., Charleston
Martin, Albert J., East Prairie
Martin, Samuel P., East Prairie
Rolwing, E. Charles, Charleston
Weisbrod, Wilfred B., East Prairie
Whitaker, Topsy T. H., East Prairie

MONITEAU COUNTY MEDICAL SOCIETY

Burke, John P., Jr., California
Fulks, Richard B., California
Kibbe, Edgar A., California
Latham, Kenyon S., California
Popejoy, H. R., California

MONROE COUNTY
(Chariton-Macon-Monroe-Randolph County Medical Society)

MONTGOMERY COUNTY MEDICAL SOCIETY

Andersen, E. J. T., Montgomery City
Byland, Samuel J., Wellsville
Helm, James O., New Florence
Hirsch, Albert, Middletown

MORGAN COUNTY MEDICAL SOCIETY

Gunn, A. J., Versailles
Gunn, Jack, Versailles
Kauffman, Ruth, Versailles
Washburn, J. L., Versailles

NEW MADRID COUNTY MEDICAL SOCIETY

Carter, Harvey W., Portageville
Chandler, Orville B., New Madrid
Ellis, Burnett E., Gideon
Husted, George W., Parma
Killion, John J., Portageville
Painter, L. B., Jr., Portageville
Reeder, Charles C., New Madrid
Roberson, John H., Lilbourn
Sarno, S. M., Morehouse
Smith, Louis J., New Madrid

NEWTON COUNTY MEDICAL SOCIETY

Bowman, Melvin C., Neosho
Cardwell, Clarence, Stella
Carter, James R., Neosho
Davis, Paul C., Neosho
Duemler, Thomas B., Seneca
Lamson, Roy C., Neosho
Lentz, Harold C., Neosho
Maness, Charles E., Neosho
Reynolds, James R., Neosho
Rolens, Louis E., Granby
Taylor, Leo T., Neosho
Whitehead, Frank F., Neosho

NODAWAY-ATCHESON-GENTRY-WORTH COUNTIES MEDICAL SOCIETY

Bauman, Henry C., Maryville
Bell, Charles T., Maryville
Blacklock, David E., King City
Bloomer, Joseph A., Maryville
Byland, Benjamin F., Maryville
Campbell, Wm. S., Albany
Cossins, Carlos E., St. Joseph
Dean, Leslie E., Maryville
Humberd, Charles D., Barnard
Imes, Elvin D., Maryville
Jackson, Wm. R., Maryville
Kadull, Paul J., Conception Junction
Kirk, Charlie W., Hopkins
Matteson, Frank B., Grant City
Musgrave, Paul W., Fairfax
Niedermyer, Edward L., Tarkio
Person, Robert C., Maryville
Reutter, Garfield A., Rockport
Rose, Frank H., Albany
Ross, Pren J., Grant City
Settle, Charles T., Rockport
Settle, Emmett R., Rockport
Wempe, G. Raymond, Tarkio

NORTH CENTRAL COUNTIES MEDICAL SOCIETY

(Adair-Schuyler-Knox-Sullivan-Putnam)

Cramb, Arthur B., Kirksville
English, Milton T., Jr., Kirksville
Freeman, Spencer L., Kirksville
Gerwig, Henry E., Downing
Grim, George E., Kirksville
Hanks, Ralf, Fulton
Hart, Pearl V., Coatesville
Henry, Clifford E., Kirksville
Herington, Warner, Green City
Holman, Jurney H., Unionville
Hudson, G. R., Kirksville
Humphrey, Henry M., Brashear
Jones, John B., Kirksville
Luman, Frank E., Edina
Miltenberger, Val E., Kirksville
Montgomery, John S., Milan
Nulton, Ida May, Lancaster
Stickler, Ralph O., Kirksville
Sullivan, William J., Providence, R. I.
Wimp, J. J., Kirksville

OREGON COUNTY
(South Central Counties Medical Society)

OSAGE COUNTY
(Unorganized)

OZARK COUNTY
(Unorganized)

OZARKS COUNTY MEDICAL SOCIETY
(Barry-Lawrence-Stone-Christian-Taney)

Aubin, Francis W., Branson
Brasher, Charles A., Mount Vernon
Bunten, Joseph C., Branson
Burney, Wallace S., Miller
Capetti, Alex P., Aurora
Coffman, Esther E. L., 4139 Connecticut St., St. Louis
Cohnberg, Rosellen E., Monett
Cottrell, Wilson P., Reeds Spring
Cowan, R. D., Aurora
Donley, Robert R., Monett
Durm, Thomas I., Cassville
Evans, Harry T., Branson
Farthing, Robert R., Ozark
Ferguson, Lewis H., Monett
Ferguson, L. H., Jr., Alexandria, La.
Glover, Kenneth, Mount Vernon
Graves, Arthur J., Mount Vernon
Hargrove, Fred T., Paris, Texas
Hellweg, Charles E., Mount Vernon
Herron, Floyd W., Aurora
Holmes, Lemuel I., Miller
Holmes, Mansell B., Tuscaloosa, Ala.
Holmes, Prince A., Mount Vernon
Kerr, Frank T., Monett
Knowles, Harry P., Rockaway Beach
McCallum, A. J. C., Aurora
Maples, Floyd H., Mount Vernon
Moennighoff, Fritz J., Monett
Newman, Mary Jane, Cassville
Ramsey, Ora W., Marionville
Robertson, Robert C., St. Cloud, Minn.
Roper, Stanley D., Ozark
Russell, James M., Monett
Shumate, L. S., Reeds Spring
Spears, Charles A., Pierce City
Stokes, Julius B., Veterans Hospital, Springfield
Threadgill, Jesse M., Forsyth
Wommack, Fred L., Crane

PEMISCOT COUNTY MEDICAL SOCIETY

Aquino, Philip J., Caruthersville
Beecher, Sheldon B., Caruthersville
Cain, Charles F., Caruthersville
Castles, Charles C., Caruthersville
Chapman, J. R., Steele
Cook, O. W., Caruthersville
Cooper, Lawrence E., Cooter
Denton, Levi D., Hayti
Kaiser, Clarence D., Hayti
Limbaugh, Walter R., Hayti
Luten, Joseph B., Caruthersville
Phipps, George W., Caruthersville
Shirey, Arnold G., Hayti
Snapp, Landon B., 627 Woodland, Nashville, Tenn.
Taylor, Edward L., Steele

PERRY COUNTY MEDICAL SOCIETY

Bailey, Wm. H., Perryville
Bredall, Jerome J., Perryville
Carron, Oscar A., Perryville
Feltz, L. W., Perryville
Fischer, Theodore, Altenburg
Legner, Stanley G., Perryville
Lutkewitte, Joseph F., St. Marys
Miller, Oliver J., Cape Girardeau
Riley, Fred P., Perryville

PETTIS COUNTY MEDICAL SOCIETY
(Sedalia)

Beckemeyer, Wm. A., 120 W. 5th St.
Bess, William E., 210 S. Ohio St.
Bishop, Wm. T., 616 W. 6th St.
Boger, James W., 120 W. 5th St.
Brady, Charles H., 205 Ilgenfritz Bldg.

Campbell, Albert J., 312 S. Ohio St.
Cannady, J. E., 312 S. Ohio St.
Carlisle, John B., 312 S. Ohio St.
Dyer, David P., Sedalia Trust Bldg.
Edwards, D. R., 107 S. Ohio St.
Gonser, Karl B., 101 S. Ohio St.
Hite, Henry A., Green Ridge
Lamy, John E., 814 W. 4th St.
Long, Frank B., 219 S. Ohio St.
Maddox, Albert R., 116 W. Main
Monroe, Alfred E., 1320 W. 4th St.
Murray, John W., 410 W. Broadway
O'Neill, Joseph B., 18th and Sneed
Osborne, Charles D., 113 E. 4th St.
Parkhurst, Charles L., Houstonia
Rhodes, Euhlan L., 312 S. Ohio St.
Rodeman, John M., 219 S. Ohio St.
Siegel, Carl D., 1216 W. 18th
Siegel, Peter V., Smithton
Snavely, Edmund C., 500 S. Ohio St.
Stauffacher, C. Gordon, 101 S. Ohio St.
Trader, Charles B., Porter Montgomery Bldg.
Walker, Wm. E., La Monte
Walter, Archie L., 120 W. 5th St.

PHELPS-CRAWFORD-DENT-PULASKI COUNTIES MEDICAL SOCIETY

Baysinger, S. L., Rolla
Breuer, R. E., Newburg
Buckthorpe, Thelma C., Waynesville
Butts, James D., St. James
Davis, Harry H., Rolla
Dillon, Wm. G., Salem
Doubek, John C., Jr., Steelville
Drake, A. A., Rolla
Elders, Frank A., Jr., Cuba
Everist, Guy V., Rolla
Feind, Earl E., Rolla
Hammler, Christiana V., St. James
Hart, Martin M., Salem
Henson, Lafayette L., Bunker
Herzog, Gustav G. A., Cuba
Hughes, Edgar O., Dixon
Hunt, Lloyd H., Salem
Irwin, Wm. F., Cuba
Joseph, George E., Salem
Kozal, Francis L., Salem
Lytle, Wm. R., Rolla
Mallette, Cyrus, Crocker
Miller, Clyde S., Waynesville
Myers, James M., Rolla
Parker, Rainey C., Steelville
Reeves, George W., Farmington
Roock, Paul C., 4339 Marey St., Omaha, Nebr.
Russell, Barbara E., Rolla
Scott, Elijah A., St. James
Siniscal, A. A., Rolla
Stricker, Emil A., St. James
Underwood, M. K., Rolla

PIKE COUNTY MEDICAL SOCIETY

Andrae, Robert L., Louisiana
Barrymore, Eugene, Bowling Green
Biggs, James B., Bowling Green
Cunningham, E. A., Louisiana
Hooker, John H., Clarksville
Hunter, Fred M., Bowling Green
Johnson, Q. Ray, Louisiana
Lewellen, Charles H., Louisiana
Lewellen, Charles P., Louisiana
Scott, Clive D., Louisiana
Treadway, W. W., Silex
Wilcoxen, Wm. B., Bowling Green

PLATTE COUNTY MEDICAL SOCIETY

Colvert, Lewis C., Weston
Durham, Silas L., Dearborn
Jennings, Ethlyn C., Parkville
Miller, Dean M., Platte City
Parker, H. Graham, Platte City
Robinson, John A., Edgerton
Underwood, Johnson, Parkville
Wilson, Robert P. C., Marshall

POLK COUNTY
(Dallas-Hickory-Polk County Medical Society)

PULASKI COUNTY
(Phelps-Crawford-Dent-Pulaski County Medical Society)

PUTNAM COUNTY
(North Central Counties Medical Society)

RALLS COUNTY
(Marion-Ralls County Medical Society)

RANDOLPH COUNTY
(Chariton-Macon-Monroe-Randolph County Medical Society)

RAY COUNTY MEDICAL SOCIETY

Buehrer, Cletus E., Lawson
Goldberg, I. E., Braymer
Greene, Luther D., Richmond
Johnson, M. C., Richmond
Masterson, Melvin L., Richmond
Shouse, Edwin, Lawson

REYNOLDS COUNTY
(Mineral Area County Medical Society)

RIPLEY COUNTY
(Unorganized)

ST. CHARLES COUNTY MEDICAL SOCIETY
(St. Charles)

Barnard, Charles A., Portage des Sioux
Behan, Lawrence G., 1212 Garfield, Topeka, Kan.
Budke, Robert J., 126 S. Main St.
Canty, Eugene J., 114 N. Main St.
Clay, Calvin, 106 Washington St.
Crider, Russell J., 206 Washington St.
Dyer, John H., Warrenton
Hardin, Thomas L., 121 N. Main St.
Jenkins, Joseph M., 117 S. Main St.
Kister, George E., 818 N. 2nd St.
Krieger, John L., O'Fallon
McIntire, Landon R., 117 S. Main St.
McMurray, Herbert C., Wentzville
Miller, Jack G., 207 N. 5th St.
Neubeiser, Ben L., 206 Washington St.
Nichols, Samuel I., Burnwell, W. Va.
Randall, Don Q., 207 N. 5th St.
Sasaki, George R., O'Fallon
Schneider, Vincent A., 207 N. 5th St.
Schulz, A. P. E., 16 Jefferson St.
Towers, O. W., 114 N. Main St.

ST. CLAIR COUNTY
(Unorganized)

ST. FRANCOIS COUNTY
(Mineral Area County Medical Society)

STE. GENEVIEVE COUNTY
(Mineral Area County Medical Society)

ST. LOUIS MEDICAL SOCIETY
(St. Louis)

Abel, Oliver, Jr., 4952 Maryland Ave. (8)
Abell, Walter E., 2253 S. 39th St. (10)
Abrams, Bernard S., 1515 Lafayette Ave. (4)
Abrams, Morris, 4405 West Pine Blvd. (8)
Adler, Benard C., 500 N. Skinker Blvd.
Agress, Harry, 1045 Missouri Theatre Bldg. (3)
Aitken, Louis F., 502 Beaumont Medical Bldg. (8)
Albrecht, Franklin H., 505 University Club Bldg. (3)
Alden, Arthur M., 520 Frisco Bldg. (1)
Alexander, Harry L., 4952 Maryland Ave. (8)
Alford, Leland B., 536 University Club Bldg. (3)
Allen, Duff S., Lister Bldg. (8)
Allen, Henry C., 212 Clayton Medical Bldg. (5)
Allen, Hollis M., 817 Missouri Theatre Bldg. (3)
Allen, Melvin A., 3701 Grandel Sq. (8)
Allen, Willard M., 630 S. Kingshighway Blvd. (10)
Allen, William E., Jr., 720 N. Sarah St. (8)
Althaus, Carl J., 5 Lister Bldg. (8)
Altheide, J. Paul, 714 University Club Bldg. (3)
Alvis, Bennett Y., 903 Carleton Bldg. (1)
Alvis, Edmund B., 903 Carleton Bldg. (1)
Ambrose, Olney A., 4660 Maryland Ave. (8)
Andrews, Raleigh K., 235 Beaumont Medical Bldg. (8)
Anstey, George, 1222 Missouri Theatre Bldg. (3)
Arneson, A. N., 457 N. Kingshighway Blvd. (8)
Arney, William G., 16 Hampton Vil. Plaza (9)
Arnold, Eugene L., 8700 Partridge Ave. (15)
Aronberg, Lawrence M., 4166 Lindell
Arzt, Franz, 4952 Maryland Ave. (8)
Atherton, Herbert R., 5 Boonridge Dr. (17)
Aufderheide, G. Russell, 4570 Fair Ave. (15)
Ayars, Treston R., 817 University Club Bldg. (3)
Baber, John C., Jr., Little Rock, Ark.
Bagby, James W., 414 Beaumont Medical Bldg. (8)
Bailey, Frank A., 3108 S. Grand Blvd. (18)
Bailey, Fred W., 1147 16th Ave., N., St. Petersburg, Fla. (6)
Baker, Cecil G., 816 Missouri Theatre Bldg. (3)
Baker, Cecil H., 816 Missouri Theatre Bldg.
Baker, William M., 3133 Hatwhorne Blvd. (4)
Banet, Samuel R., 457 N. Kingshighway
Bardenheier, J. Phil, 602 Wall Bldg. (8)
Barker, Jesse W., 1504 S. Jefferson Ave. (4)
Baron, William, 3601 S. Jefferson Ave. (18)
Barrett, Ralph M. S., 404 S. Hanley Rd. (5)
Bartels, Leo, 205 Frisco Bldg. (1)
Bartlett, Robert W., 929 University Club Bldg. (3)
Bartlett, Willard, Jr., 945 Missouri Theatre Bldg. (3)
Bartnick, Mitchel L., 3895 Holly Hills (16)
Barton, Henry R., 3830 Park Ave. (10)
Bassett, John W., VA Hospital, Aspinwall, Pa.
Bassett, Robert B., 5427 Delmar Blvd. (12)
Basso, Donato E., 632 Second St., Brooklyn, N. Y.
Bates, George C., 3412 E. 147th St., Cleveland, Ohio (20)
Bauer, Joseph A., 101 S. Meramec
Bauer, Louis, 2646 Gravois Ave. (18)
Bauman, Charles M., 1106 Chemical Bldg. (1)
Baumgarten, Walter, Jr., 912 Beaumont Medical Bldg. (8)
Bawell, Malcolm B., 59 Aberdeen Pl. (4)
Beam, Sim F., 52 Middlesex Dr. (17)
Beare, J. Bryon, 401 Beaumont Medical Bldg. (8)
Becke, William G., 912 Beaumont Medical Bldg. (8)
Becker, Edward J., 205 Frisco Bldg. (1)
Becker, George H., 210 Lister Bldg. (8)
Beckette, Edmund S., 320 Lister Bldg. (8)
Beckham, Genevieve S., 4950 Walsh Ave. (9)
Beem, John R., 4027 Ashland Ave. (7)
Behrens, Donald T., 4644 Lee Ave. (15)
Beisbarth, Albert, 403 S. Side Nat. Bank Bldg. (16)
Beisbarth, Carl C., 801 Beaumont Medical Bldg. (8)
Bell, Robert M., 640 Beaumont Medical Bldg. (8)
Benincasa, Anthony V., 6153a Natural Bridge Ave. (20)
Benjamin, Durand, 7430 Virginia Ave. (11)
Berard, Louis N., 984 Arcade Bldg. (1)
Berg, Ralph, 770 Paulsen Bldg., Spokane, Wash.
Berg, Ralph, Jr., Portland, Oregon
Bergman, Hugo, F., 203 Beaumont Medical Bldg. (8)
Bergner, Grace E., 114 N. Taylor Ave. (8)
Berland, Harry I., 996 Arcade Bldg. (1)
Berman, Joseph P., 7452 University Drive (5)
Berman, William, 462 N. Taylor Ave. (8)
Bersche, Bertram L., 5214 Pernod Ave. (9)
Bettonville, Paul J., Jr. 7563 York Dr. (5)
Bieri, Earl J., 633 Metropolitan Bldg. (3)
Bierman, Max John, 245 Grandon (5)
Bilotta, Laurence A., Orlando Air Force Base, Orlando, Fla.
Bilsky, Nathan, 2739 N. Grand Blvd. (6)
Bindbeutel, Arthur H., 3953 Holly Hills

Bindbeutel, D. A., 3953 Holly Hills Blvd. (16)
Birdsall, Thomas C., 4660 Maryland Ave. (8)
Birsner, Louis J., 1232 Missouri Theatre Bldg. (3)
Bisno, Daniel, 310 Lister Bldg. (8)
Blache, J. Owen, 4924 Lotus Ave. (13)
Black, James M., 705 Kingshighway Blvd. (8)
Black, William D., 508 N. Grand (3)
Blair, Vilray P., Rte. No. 1, Box 423, Florissant, Mo.
Blair, Vilray P., Jr., 735 Beaumont Medical Bldg. (8)
Bleyer, Adrien, 819 University Club Bldg. (3)
Block, Arnold S., 1041 Missouri Theatre Bldg. (3)
Bock, L. H., 1504 S. Grand Blvd. (4)
Bockelman, Clifford H., 2615 Brentwood Blvd. (17)
Boedeker, Roy V., 453 N. Taylor Ave. (8)
Boemer, L. C., 517 Beaumont Medieal Bldg. (8)
Bohne, William R., 117 Lister Bldg. (8)
Bohrer, Harry C., 315 University Club Bldg. (3)
Boldizar, A. G., 1002 Beaumont Medical Bldg. (8)
Boldt, Thomas H., 408 Humboldt Bldg. (3)
Bondurant, Bryce H., 153 Huntleigh Dr. (22)
Bowdern, Edward H., 16 Sussex Dr. (17)
Bowerman, Harold H., 819 University Club Bldg. (3)
Bowersox, Warren A., 400 Lister Bldg. (8)
Boyd, Arthur M., 1703 S. Grand Blvd. (4)
Bradley, Frank R., 600 S. Kingshighway Blvd. (19)
Bremser, Harry L., 4266 Manchester Ave. (10)
Brennan, J. Anthony, State Hospital No. 4, Farmington, Mo.
Brennan, Robert A., 5417 S. Grand Blvd. (11)
Brennan, Robert V., 9300 Watson Rd. (19)
Bricker, Eugene M., 457 Kingshighway Blvd. (8)
Britt, Robert E., 1004 Missouri Theatre Bldg. (3)
Brockelmann, Emmy Ross, 1918 E. Grand Ave. (7)
Brockelmann, Erich, 719 Metropolitan Bldg. (3)
Broeder, William H., 1225 Sidney St. (4)
Brodeur, Armand E., 3934 DeTonty St.
Bromberg, Leon, 542 Missouri Theatre Bldg. (3)
Brookes, Henry S., Jr., 37 Algonquinwood Pl. (19)
Brookes, Robert D., 411 Beaumont Medical Bldg. (8)
Brooks, Arthur C., 60 Kingsbury Pl. (12)
Brooks, Clifton R., 3275 Sulphur Ave. (9)
Broun, Goronwy O., 1325 S. Grand Blvd. (4)
Brown, Arthur C. F., 1202 Woodland Dr. (17)
Brown, Clyde O., 502 Beaumont Medical Bldg. (8)
Brown, E. Eugene, 419 Wall Bldg. (8)
Brown, James B., 400 Metropolitan Bldg. (3)
Brown, Seymour, 7553 Gannon Ave. (5)
Bruce, Helen L., 3263 Hawthorne Blvd. (4)
Bryan, James H., 330 Beaumont Medical Bldg. (8)
Bryan, Theodore L., U. S. Army Hosp., Camp Atterbury, Ind.
Bryan, William T. K., 330 Beaumont Medical Bldg. (8)
Bublis, Mary D., Temple, Texas
Bublis, Norbert J., 4349 Forest Park Blvd.
Buddy, E. P., 405 University Club Bldg. (3)
Bulger, Harold A., 4405 West Pine Blvd. (8)
Burford, Cyrus E., 958 Arcade Bldg. (1)
Burford, E. Humber, 958 Arcade Bldg. (1)
Burns, Francis J., 4660 Maryland Ave. (8)
Burns, Francis R., 16 Hampton Village Plaza
Burns, Stanley S., Bremerton, Wash.
Burns, Stanley S., Jr., U. S. Naval Hospital, Bremerton, Wash.
Burst, Donald O., 6757 Plainview Ave. (9)
Burst, Emil A., 1901 Cherokee St. (18)
Busch, Anthony K., 5300 Arsenal St. (9)
Butcher, Harvey R., Jr., 600 S. Kingshighway
Byars, Louis T., 400 Metropolitan Bldg. (3)
Byrne, John E., 4936a Nottingham Ave. (9)
Byrns, Robert E., 3804 N. Grand Blvd. (7)
Cadwell, Paul M., 1420 Grattan St. (4)
Calkins, Delevan, 8505 Delmar Blvd. (24)
Cameron, Solon, 719 Metropolitan Bldg. (3)
Campbell, Cecil S., 952 Arcade Bldg. (1)
Campos, F. J., 405 Lister Bldg. (8)
Cannon, Edward M., 714 University Club Bldg. (3)
Cappel, Powel B., 3284 Ivanhoe Ave. (9)
Caravelli, Anthony F., 1004 Missouri Theatre Bldg. (3)
Carney, Joseph E., 525 Frisco Bldg. (1)
Carr, Archie D., 215 Beaumont Medieal Bldg. (8)
Carrier, John A., 5840 Staley Ave., (23)
Carroll, George A., 304 University Club Bldg. (3)
Carroll, Grayson, 609 Humboldt Bldg. (3)
Carter, William W., 407 Medical Arts Bldg., Knoxville, Tenn.
Casberg, Melvin A., 1402 S. Grand Blvd. (4)
Casey, Edwin J., 425 Metropolitan Bldg. (3)
Cason, Elbert H., 3606 Gravois Ave. (16)
Cassel, Melvin A., 2801 N. Taylor Ave. (15)
Cassidy, Leslie D., 4952 Maryland Ave. (8)
Catanzaro, Anthony F., 6525 Itaska Ave. (9)
Cavender, Savino W., Address Unknown
Chapman, Arthur H., Cape May, N. J.
Charles, Benjamin H., 912 Beaumont Medical Bldg. (8)
Charles, Cecil M., 1027 Beaumont Medical Bldg. (8)
Charnas, Raymond M., 727 Missouri Theater Bldg. (3)
Cherre, Charles J., Norfolk, Va.
Chopin, George F., 5744 Clemens Ave. (12)
Ciapciak, Stanley J., 1901 Madison Ave. (6)
Clancy, James F., 424 University Club Bldg. (3)
Claridge, Ralph A., 7059 Deerpath Dr. (23)
Clark, J. Fred W., 864 Hamilton Ave. (12)
Cleary, Frank, 1935 Park (4)
Cleveland, Horace F., 1325 Somerset Pl., Long Beach, Calif. (7)
Clithero, W. Harvey, 906 Carleton Bldg. (1)
Coates, Thomas A., 5203 Chippewa St. (9)
Coffin, Ernest L., Portage, Maine
Cohen, Frank, 2330a Union Blvd. (13)
Cohen, Louis, 318 Lister Bldg. (8)
Connor, John J., 433 Metropolitan Bldg. (3)
Conrad, Adolph H., 512 Beaumont Medical Bldg. (8)
Conrad, Adolph H., Jr., 512 Beaumont Medical Bldg. (8)
Conrad, Marshall B., 809b Dugan Ave. (23)
Conway, Francis, 1259 N. Kingshighway Blvd. (13)
Cook, James T., 5536 Robin Ave. (20)
Cook, Jerome E., 4409 West Pine Blvd. (8)
Cook, Ralph L., 423 Metropolitan Bldg. (3)
Cooper, Henry T., 1115 Paul Brown Bldg. (1)
Copher, Glover H., 602 S. Euclid Ave. (10)
Cordonnier, Justin, 315 Beaumont Medical Bldg. (8)
Cornell, John C., 5005a Gravois Ave. (16)
Correnti, Nicholas A., 453 N. Taylor Ave. (8)
Cory, Harriet Stevens, 6157 Pershing Ave. (12)
Costa, Dominic V., 16 Hampton Village Plaza (9)
Costello, Cyril J., 1515 Lafayette Ave. (4)
Costello, Joseph P., 4952 Maryland Ave. (8)
Costello, Joseph P., Jr., 30 Arundel Pl. (5)
Costen, James B., 722 Beaumont Medical Bldg. (8)
Cox, DeWitt W., Jr., 815 Dugan Dr.
Crawford, Katherine J., 216 S. Kingshighway Blvd. (10)
Creane, John C., 2504 N. 14th St. (6)
Crego, Clarence H., Jr., 204 Humboldt Bldg. (3)
Crossen, Robert J., 903 University Club Bldg. (3)
Crossman, Robert W., 1509 Holly Drive
Crotty, Richard Q., 440 Beaumont Medical Bldg. (8)
Cummings, James H., 444 N. Euclid Ave. (8)
Cutler, Harold M., 1018 Beaumont Medical Bldg. (8)
Czebrinski, Edward W., 3701 Grandel Sq. (8)
Daake, John W., 4254a Arsenal St. (16)
Dahms, Gustave, 1452 S. Grand Blvd. (4)
Dalton, Arthur R., 207 Lister Bldg. (8)
Daman, George A., 5203 Chippewa St. (9)
Danis, Peter G., Missouri Theatre Bldg. (3)
Davie, Joseph, 406 Frisco Bldg. (1)
Davis, Frank L., 620 University Club Bldg. (3)
Davis, Martin W., 490 Oakwood
Davis, Myron W., 718 Beaumont Medical Bldg. (8)
Davis, Thomas M., 2424 N. Grand Blvd. (6)
Day, Anthony B., 411 Beaumont Medical Bldg. (8)
Deakin, Rogers, 723 University Club Bldg. (3)
Dean, Lee Wallace, Jr., 1018 Beaumont Medical Bldg. (8)
Demko, Frank, 1321 S. Broadway (4)
Demko, William, 3450 Gravois Ave. (18)
Denk, Albert A., 7216 Natural Bridge Rd. (21)
DePew, Heber B., 1446 S. Grand Blvd. (4)
Deppe, Arthur H., 835 University Club Bldg. (3)
Deutch, Max, 1206 Missouri Theatre Bldg. (3)
Devine, John B., 16 Hampton Village Plaza (9)
Dickson, James A., 5883 Julian Ave. (12)
Diehr, Alvin H., 845 Missouri Theatre Bldg. (3)
DiLeo, Senatro W., 3616 Russell Blvd. (10)
Dmytryk, Eugene T., 518 University Club Bldg. (3)
Dorsett, E. Lee, 729 Missouri Theatre Bldg. (3)
Doubek, John C., 2767 Gravois Ave. (18)
Doyle, Charles R., 422 Missouri Theatre Bldg. (3)
Doyle, Raymond E., 3102a S. Grand Blvd. (18)
Drace, Charles C., 3702 Gravois Ave. (16)
Drace, Charles C., Jr., 19 E. Lockwood Ave. (19)
Drake, Truman G., 114 N. Taylor Ave. (8)
Drews, Leslie C., 516 Metropolitan Bldg. (3)
Drey, Norman W., 916 University Club Bldg. (3)
Dreyer, Carl J., 3821 Utah Pl. (16)
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Knight, William A., 8201 N. Broadway (15)
Knight, William A., Jr., 4161 Lindell Blvd. (8)
Knoke, Frederick William, Jr., 6200 Hoffman Ave. (9)
Knowlton, Norman P., Jr., 939 Golf Course Dr. (24)
Koenig, George H., 5135 31st Ave., S., St. Petersburg, Fla.
Koenig, Karl F., 502 Beaumont Medical Bldg. (8)
Kohler, Eugene J., 4968a Delmar Blvd. (8)
Kohler, Louis H., 5300 Arsenal St. (9)
Koon, Bernard T., 4755a Morganford Rd. (16)
Kopp, Leonard J., 7844 Madison Dr. (14)

Kotkis, Alexander J., Hannibal, Mo.
Kotner, Lawrence M., 4409 West Pine Blvd. (8)
Kotner, Irvin A., 607 N. Grand Ave.
Kountz, William B., 415 Lister Bldg. (8)
Kouri, Martin F., 319 Metropolitan Bldg. (3)
Koutsoumpas, William V., 1405 S. Broadway (4)
Kowert, Edward H., 208 Metropolitan Bldg. (3)
Kraft, Edward O., 9013 Moritz Ave. (17)
Kramer, Fred, 4161 Lindell Blvd. (8)
Kramolowsky, H. H., 982 Arcade Bldg. (1)
Krause, G. Lynn, 614 Beaumont Medical Bldg. (8)
Krebs, Joseph M., 910 Missouri Theatre Bldg. (3)
Krebs, Otto S., 207 Beaumont Medical Bldg. (8)
Kromer, Charles, 6606 Oleatha Ave. (9)
Kubitschek, Paul E., 207 Beaumont Medical Bldg. (8)
Kuenkel, Victor H., 305 S. Westlake, Los Angeles, Calif. (5)
Kurth, Robert K., 16 Hampton Vil. Plaza (9)
Kurtzeborn, Edwin E., 3526 Washington Ave. (3)
Kurz, R. F., 1148 Pierce Bldg. (2)
Kuttner, Marianne, 1206 Missouri Theatre Bldg. (3)
LaDriere, Raymond J., 35 N. Central Ave. (5)
Lam, Robert Lee, 600 S. Kingshighway Blvd. (10)
Lammert, Thomas King, New Rochelle, N. Y.
Landree, James C., 437 University Club Bldg. (3)
Lane, Clinton W., 440 Beaumont Medical Bldg. (8)
Langan, William J., Jr., 5803 Plymouth Ave. (12)
Lange, Adolph C., 512 Wall Bldg. (8)
Langenbach, Alfred M., 6200 Hoffman Ave. (9)
Lansche, Elmer A., 4885 Natural Bridge Ave. (15)
Larimore, Joseph W., 626 Beaumont Medical Bldg. (8)
Larsen, Kenneth V., 819 University Club Bldg. (3)
Lassar, Gilbert N., 1307 Washington Ave. (3)
Lawler, Harry J., Billings, Mont.
Lawrence, John V., 4354 West Pine Blvd. (8)
Lawton, John T., 4903 Wabada Ave. (13)
Lawton, Thomas P., 2743 N. Grand Blvd. (6)
LeBlanc, Leo J., 708 Beaumont Medical Bldg. (8)
Lederman, Joseph, 2400a N. Grand Blvd. (6)
Lee, Elbert J., Jr., 220 N. 4th St. (2)
Leighton, William E., 801 Beaumont Medical Bldg. (8)
Lembeck, Joseph A., 601 University Club Bldg. (3)
Lenobel, Milton I., 504 Metropolitan Bldg. (3)
Lenzen, John L., 730 Hodiamont Ave.
Levin, Sidney S., 440 N. Taylor Ave. (8)
Levy, Irwin, 4952 Maryland Ave. (8)
Leydig, Stanley M., 16 Hampton Vil. Plaza (9)
Lhevine, Dave B., Tulsa, Okla.
Lieb, Otto V., 307 Lister Bldg. (8)
Liese, Grover, 316 Beaumont Medical Bldg. (8)
Liggett, Hiram S., 401 Beaumont Medical Bldg. (8)
Lindeman, Carl H., 4126 Shreve Ave. (15)
Lipsitz, Ellis S., 457 N. Kingshighway Blvd. (8)
Lipton, Harold, 921 Missouri Theatre Bldg.
Lischer, Carl E., 457 N. Kingshighway Blvd. (8)
Littmann, Lewis E., 8231 Clayton Rd. (17)
Litzow, Louis T., 1114 Missouri Theatre Bldg. (3)
Loeb, Virgil, 309 Beaumont Medical Bldg. (8)
Loeb, Virgil, Jr., 600 S. Kingshighway Blvd. (10)
Loeffel, Ellen S., 635 Beaumont Medical Bldg. (8)
Lohr, Curtis H., 601 S. Brentwood Blvd. (5)
Londe, Sol, 201 Lister Bldg. (8)
Lonergan, Warren M., 457 N. Kingshighway Blvd. (8)
Lonsway, Maurice J., 207 Beaumont Medical Bldg. (8)
LoPiccolo, Vincent J., 1931 Marconi Ave. (10)
Lottes, J. Otto, 16 Hampton Vil. Plaza (9)
Lowenstein, Paul S., 457 N. Kingshighway Blvd. (8)
Lucido, Joseph L., 1023 Missouri Theatre Bldg. (3)
Luedde, Philip S., 16 Hampton Vil. Plaza (9)
Luedde, William H., 139 Stoneleigh Towers (24)
Lund, Herluf G., 2864 Lawndell Dr.
Lurie, Harold H., 4515 Maryland Ave. (8)
Luten, Drew, 502 Beaumont Medical Bldg. (8)
Lyman, Edward H., 906 Carleton Bldg. (1)
Lyman, Harry W., 906 Carleton Bldg. (1)
Lynxwiler, Chester P., 1325 S. Grand Blvd. (4)
Lyttle, Garnet C., 2407a N. Broadway (6)
Lytton, William B., 29 Overhill Dr. (17)
McAdam, C. Rush, 525 Frisco Bldg. (1)
McAfee, C. Alan, 457 N. Kingshighway Blvd. (8)
McBratney, Emmett W., 1812 S. Elm St., Tucson, Ariz.
McCarroll, Henry R., 614 Beaumont Medical Bldg. (8)
McCarthy, Eugene F., 5070 Westminster Pl. (8)
McDonald, George H., 5795 Pershing Ave. (12)
McDonald, John J., Scott Field, Belleville, Ill.
McDowell, Frank, 400 Metropolitan Bldg. (3)
McElroy, Glenn L., 909 University Ave., Columbia, Mo.
McElvain, Robert C., 4356 Worne Ave. (7)
McFadden, James F., 940 Missouri Theatre Bldg. (3)
McFadden, James F., Jr., 4 Ridgemoor Dr. (5)
McFarlane, John A., Montgomery, Ala.
McGahan, John J., 1325 S. Grand Blvd. (4)
McGennis, Patrick, P. O. Box 603 (1)
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McGinnis, William F., 716 Beaumont Medical Bldg. (8)
McGuire, William A., 2322 N. Kingshighway Blvd. (13)
McMahon, Alphonse, 806 Missouri Theatre Bldg. (3)
McMahon, Bernard J., 806 Missouri Theatre Bldg. (3)
McNamee, Owen J., 7619 Ivory Ave. (11)
McNamee, William F., 7619a Ivory Ave. (11)
McSwiney, John G., 5014 Thekla Ave. (15)
Maas, Hermann, 827 Metropolitan Bldg. (3)
MacBryde, Cyril M., 429 Missouri Theatre Bldg. (3)
Mack, Robert E., 1325 S. Grand Blvd. (4)
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Macnish, James M., 4405 West Pine Blvd. (8)
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Maizus, S. H., 405 S. Side Natl. Bank Bldg. (16)
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Bldg. (3)
Martin, Charles E., 4020 W. Florissant Ave. (7)
Martin, Raymond T., 5203 Chippewa St. (9)
Martin, Thomas M., 937 Missouri Theatre Bldg. (3)
Mason, Roy E., 410 Frisco Bldg. (1)
Massie, Edward, 457 N. Kingshighway Blvd. (8)
Masters, William H., 630 S. Kingshighway Blvd. (10)
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Mattis, Robert D., 937 Missouri Theatre Bldg. (3)
Maughs, Sydney B., 4500 West Pine Blvd. (8)
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Maxwell, Richard W., 8126 Teasdale Ave. (24)
Medler, Francis J., 4114 W. Florissant Ave. (15)
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Meiners, Theodore M., 1513 New Jersey Ave., New Castle, Del.
Meisenbach, A. Edward, 3903 Olive St. (8)
Melick, William F., 306 Humboldt Bldg. (3)
Mellies, Eugene G., 7503 Florissant Rd. (21)
Mellies, George A., 2739 N. Grand Blvd. (6)
Mendonsa, Lawrence E., 837 University Club Bldg. (3)
Menown, Roland R., 5330 Geraldine Ave. (15)
Merenda, Sam J., 45 Berry Rd.
Merklin, Anton L., 3507 Potomac St. (18)
Merz, Jean J., 6005 Bishops Pl. (9)
Metz, Charles O., 3102a S. Grand Blvd. (18)
Meyer, Curtis A., 4222 Childress Ave. (9)
Meyer, Herman M., 4409 West Pine Blvd. (8)
Meyer, James E., 1020 Art Hill Pl. (10)
Meyer, Oscar D., 6029 S. Kingshighway Blvd. (9)
Meyerhardt, Milton H., 4409 W. Pine
Meyers, Montague M., 1300 Grant Rd. (19)
Mezera, Raymond A., 201 Humboldt Bldg. (3)
Michael, Vernon E., 957 Arcade Bldg. (1)
Michaelree, John F., 2816 Sutton Ave. (17)
Middleman, Isadore C., 462 N. Taylor Ave. (8)
Mier, Thomas M., 703 University Club Bldg. (3)
Milder, Benjamin, 501 Humboldt Bldg. (3)
Miles, Paul W., 602 S. Euclid Ave. (10)
Miller, Charles W., 408 Humboldt Bldg. (3)
Miller, Dan Tucker, 1001 Paul Brown Bldg. (1)
Miller, H. Edward, 29 North Ct. (8)
Millikin, L. A., 2608 S. Kingshighway Blvd. (9)
Mills, Warren B., 1420 Grattan St. (4)
Miloslavich, Edward L., 5104 Northland Ave. (13)
Milster, Clyde R., 409 Frisco Bldg. (1)
Missey, Wilburn C., Jr., 6210a Columbia Ave. (9)
Mistachkin, Norman L., 3903 Olive St. (8)
Moeller, Carl E., 3537 S. Jefferson Ave. (18)
Molholm, Hans B., 4500 West Pine Blvd. (8)
Montani, Charles, 5147 Daggett Ave. (10)

Moore, Neil S., 7299 Westmoreland Dr. (5)
Moore, Robert A., 602 S. Euclid Ave. (10)
Moore, Sherwood, 600 S. Kingshighway Blvd. (10)
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Moore, William A., 925a Goodfellow Blvd. (12)
Moragues, Vincente, 1402 S. Grand Blvd. (4)
Morfit, John C., 7112 Wydown Ave. (5)
Morrin, Kevin C., 5251 Westminster Pl. (8)
Morris, Harvey E., 4005 W. Florissant Ave. (7)
Morris, Mary E., 719 Metropolitan Bldg. (3)
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Motzel, Albert J., 6238 Washington Ave. (5)
Mountjoy, Grace Scholz, 4439 Floriss Pl. (15)
Mowrey, William O., 3633 Fair Ave. (15)
Muckerman, Richard I. C., 20 N. Kingshighway Blvd. (8)
Mudd, J. Gerard, 35 Godwin Lane (17)
Mudd, James L., 914 Missouri Theatre Bldg. (3)
Mueller, Charles B., 5238 Murdoch Ave.
Mueller, Clarence E., 634 N. Grand Ave.
Mueller, Joseph A., 2924 S. Grand Blvd. (18)
Mueller, Morris A., 24 Deerfield Rd. (17)
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Mueller, Robert J., 16 Hampton Vil. Plaza (9)
Mueller, W. K., 601 University Club Bldg. (3)
Muenster, Joseph J., Jr., 739 N. McKnight Rd.
Muether, Raymond O., 4161 Lindell Blvd. (8)
Mullarky, Wilbur A., 7043 Mardel Ave. (9)
Mulligan, Leo V., 916 Missouri Theatre Bldg. (3)
Munsch, Augustus P., 306 Humboldt Bldg. (3)
Munsch, Girard A., 33 N. Meramec Ave. (5)
Murphy, James P., 934 University Club Bldg. (3)
Murphy, John C., 228 Beaumont Medical Bldg. (8)
Murphy, John P., 308 Lister Bldg. (8)
Murphy, John Patrick, Jr., 835 Missouri Theatre Bldg. (3)
Murphy, Paul, 508 N. Grand Ave.
Murray, Louis F., 605 Russell Blvd. (4)
Mutshnick, Clara P., 3103 Shenandoah Ave. (4)
Myers, E. Lee, 208 Wall Bldg. (8)
Natoli, William J., 725 McKnight Rd.
Nawrocki, Joseph F. J., 1901 Madison St.
Neilson, Arthur W., 306 Humboldt Bldg. (3)
Neilson, Charles H., 6319 Alexander Dr. (5)
Nelson, William, 5449 Delmar Blvd. (5)
Nemec, Stanley S., 205 Wall Bldg. (8)
Nester, Charles A., 5600 S. Compton Ave. (11)
Nester, Gerard A., 5600 S. Compton Ave. (11)
Neumann, Roland F., Jr., 418 Beaumont Medical Bldg. (8)
Neun, W. F., 5862 Delor St. (9)
Newman, Harold G., 3720 Washington Ave.
Newman, Percy, 3539 Hartford St. (18)
Nicholson, Clarence M., Pennsylvania Hotel, St. Petersburg, Fla.
Nicolai, Charles H., 7 Treebrook Lane (24)
Niesen, Frank Joseph, 5051a Oleatha Ave. (9)
Noah, Joseph W., 625 University Club Bldg. (3)
Nolan, Charles J., 736 University Club Bldg. (3)
Noller, Henry W., 540 Beaumont Medical Bldg. (8)
Northup, Glenn R., 740 S. 4th St. (2)
Norton, William Hudson, 729 Missouri Theatre Bldg. (3)
Nuetzel, John A., E. St. Louis, Ill.
Nye, Robert S., 3201 Arsenal St. (18)
Obermeyer, Charles G., 4926 Lansdowne Ave. (9)
O'Brien, Edward C., 3632 Flora Pl. (10)
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Odell, Richard T., 600 S. Kingshighway Blvd. (10)
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Ogura, Joseph H., 5281 Waterman Ave. (8)
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O'Keefe, Charles D., 718 Beaumont Medical Bldg. (8)
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Payne, Richard J., 718 University Club Bldg. (3)
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Peeler, James O., 2505 N. 15th St. (6)
Pelz, Mort D., 304 University Club Bldg. (3)
Penney, David L., 316 Wall Bldg. (8)
Pennington, F. E., 317 University Club Bldg. (3)
Pennoyer, James, 909 University Club Bldg. (3)
Pernoud, F. G., 974 Arcade Bldg. (1)
Pernoud, F. G., Jr., 617 Metropolitan Bldg. (3)
Pernoud, Michael F., 17 Covington Meadows (24)
Peters, Ann DeHuff, 8819 Wrenwood Rd. (17)
Peters, Augustus W., 4145a S. Grand Blvd. (18)
Peters, Richard M., 8819 Wrenwood Rd. (17)
Peugnet, Hubert B., 500 N. Skinker Blvd. (5)
Pfeifer, Oliver C., 4523 S. Kingshighway Blvd. (9)
Pfeiffenberger, Mather, Jr., 600 S. Kingshighway Blvd. (10)
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Pickrell, Claude D., 406 Frisco Bldg. (1)
Piekarski, Anthony A., 1525a Cass Ave. (6)
Pieper, Henry G., 3456 Gravois Ave. (18)
Pitzman, Marsh, 6 Kingsbury Pl. (12)
Plag, Albert F., 3150 Morganford Rd. (16)
Ploehn, Emma, 2728 Geyer Ave. (4)
Plumpe, Tupper, 3933 S. Grand Blvd. (18)
Pollack, Max, 230 Metropolitan Bldg. (3)
Pollock, Ellis L., 3958 Arsenal St. (16)
Portuondo, Bonaventura C., 3532 Flora Ct. (4)
Post, Lawrence T., 524 Metropolitan Bldg. (3)
Post, M. Hayward, 524 Metropolitan Bldg. (3)
Potashnick, Robert, 824 Metropolitan Bldg. (3)
Pote, Thomas B., 4925 Parkview Pl. (10)
Potter, Allen B., 5203 Chippewa St. (9)
Powell, Carl A., 819 W. High St., Jefferson City, Mo.
Powell, Earl A., 729 Frisco Bldg. (1)
Powell, Rudolph V., 512 Beaumont Medical Bldg. (8)
Powers, Pierce W., 1106 Missouri Theatre Bldg. (3)
Pranger, Sylvester H., 4952 Maryland Ave. (8)
Presnell, Cleitus A., 630 Missouri Theatre Bldg. (3)
Press, Maurice J., 7508 York Dr. (5)
Probstein, Jacob G., 108 Lister Bldg. (8)
Proetz, Arthur W., 1002 Beaumont Medical Bldg. (8)
Pruett, Burchard S., 6006 Virginia Ave. (11)
Pruett, Hubert S., 2739 N. Grand Blvd. (6)
Puckett, Cordelia, 69 Crestwood Dr. (5)
Pulliam, M. J., 618 University Club Bldg. (3)
Purcell, Harry K., 4660 Maryland Ave. (8)
Pyne, Herbert S., 2752a Cherokee St. (18)
Quinn, Abram T., 6917 Fyler Ave. (9)
Quirin, Warren S., 2621 S. Jefferson Ave. (18)
Raemdonck, Alphonse J., 4390 West Pine Blvd. (8)
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Rendleman, George F., 957 Arcade Bldg. (1)
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Rice, Earl R., 611 Olive St. (1)
Richman, Elmer, 1034 Missouri Theatre Bldg. (3)
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Riley, Ralph D., 1134 Missouri Theatre Bldg. (3)
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Roche, Maurice B., 226 Beaumont Medical Bldg. (8)
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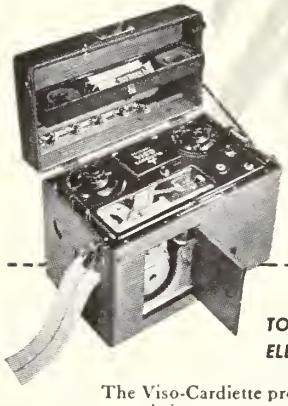
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Rothman, Paul M., 3103 Shenandoah Ave. (4)
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Rouse, David M., La Belle, Mo.
Rouse, Ernest T., 1011 Beaumont Medical Bldg. (8)
Royce, Robert K., 316 Beaumont Medical Bldg. (8)
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Rudi, Herbert J., 3532 Gravois Ave. (18)
Ruhling, Rudy, 5203 Chippewa St. (9)
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Ryan, Robert E., 615 Wall Bldg. (8)
Ryburn, John P., 2345 Hebert St. (7)
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St. John, Thomas C., 832 Metropolitan Bldg. (3)
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Sandperl, Harry, 730 Missouri Theatre Bldg. (3)
Sanford, Joseph Hoy, 401 Beaumont Medical Bldg. (8)
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Saslow, George, 517 S. Euclid Ave. (10)
Sassin, Edmond F., 324 Frisco Bldg. (1)
Sato, George, 337 N. Euclid Ave. (8)
Satterfield, Val B., 415 Lister Bldg. (8)
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Sauer, William E., 218 Beaumont Medical Bldg. (8)
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Scheer, George E., 204 Humboldt Bldg. (3)
Scheff, Harold, 457 N. Kingshighway Blvd. (8)
Scherman, Victor E., 830 Beaumont Medical Bldg. (8)
Scherrer, Fred W., Jr., 811 Metropolitan Bldg. (3)
Schiele, Herbert S., Jr., 6243 Southwood Ave. (5)
Schlenker, John L., 5400 Arsenal St. (9)
Schlenker, Lawrence, 3515 S. Grand Blvd. (18)
Schlosstein, Adolph G., 3438 Russell Blvd. (4)
Schlueter, Newell W., 204 Pasteur Bldg. (8)
Schlueter, Robert E., 3839 Lindell Blvd. (8)
Schmidt, Edwin H., 9244 Coral Dr. (23)
Schmiemeier, Herman A., 6811a Gravois Ave. (16)
Schmiemeier, Roy H., 6422 S. Kingshighway Blvd. (9)
Schmitz, Edgar F., 501 Metropolitan Bldg. (3)
Schnoebelen, Paul C., 101 Pasteur Bldg. (8)
Schoetker, George H., Clearwater, Fla.
Scholz, Roy P., 620 Metropolitan Bldg. (3)
Schrepel, Herbert O., 614 Missouri Theatre Bldg. (3)
Schuchat, W. Louis, 3866 Flora Pl. (10)
Schuck, Philip, 1703 S. Grand Blvd. (4)
Schumacher, Cyril W., 4991 Thrush Ave. (20)
Schwartz, Frederick O., 727 Metropolitan Bldg. (3)
Schwartz, Henry G., 600 S. Kingshighway Blvd. (10)
Schweiss, John Francis, 1133 S. Brentwood Blvd. (17)
Sciortino, Gaspare, 5501a St. Louis Ave. (20)
Sciortino, John S., 801 Beaumont Medical Bldg. (8)
Scobee, Richard G., 640 S. Kingshighway Blvd. (10)
Scopelite, Joseph A., 3718 N. Grand Blvd. (7)
Scott, Elwin P., 3258 Lafayette Ave. (4)
Scott, Wendell G., 35 N. Central
Seabold, John A., 1006 Carleton Bldg. (1)
Seaman, William B., 510 S. Kingshighway Blvd. (10)
Seddon, John W., 4500 West Pine Blvd. (8)
Seelig, Major G., 54 Belleau Ave., Atherton, Calif.
Seib, George A., 2323 Lafayette Ave. (4)
Senseney, Eugene T., 201 Pasteur Bldg. (8)
Senturia, B. H., 500 N. Skinker Blvd. (5)
Senturia, Hyman R., 462 N. Taylor Ave. (8)
Sertl, John D., 2840a California Ave. (18)
Sevin, Omar R., 4952 Maryland Ave. (8)
Sewing, Arthur H., 2342 St. Louis Ave. (6)
Sexton, Daniel L., 937 University Club Bldg. (3)
Sexton, Elmer E., Arcade Bldg. (1)
Shackelford, H. H., 504 Wall Bldg. (8)
Shahan, Philip T., 524 Metropolitan Bldg. (3)
Shahan, William E., 524 Metropolitan Bldg. (3)
Shaner, John F., 912 Beaumont Medical Bldg. (8)
Shanklin, Benjamin, 1514 S. Jefferson Ave. (4)
Shapleigh, John B., 321 N. Taylor Ave. (8)
Sheedy, John A., 764 28th St., San Francisco, Calif.
Sheets, John S., 2500 S. Kingshighway Blvd. (10)
Sheets, Martin E., 4329 Manchester Ave. (10)
Shelton, Harold J., 16 Hampton Village Plaza (9)
Sherard, Julius C., 2702a Franklin Ave. (6)
Sheridan, Edmund R., 16 Hampton Village Plaza (9)
Sherwin, Charles F., 801 Beaumont Medical Bldg. (8)
Sherwin, Charles S., 801 Beaumont Medical Bldg. (8)
Shrader, E. Lee, 1325 S. Grand Ave.
Shreffler, A. R., 1021 Missouri Theatre Bldg. (3)
Shutt, Cleveland H., 220 N. 4th St. (2)
Shy, James C., 4047a Gravois Ave. (16)
Siddall, H. Stewart, U. S. Army Hospital, Ft. Campbell, Ky.
Siebert, Walter J., 3 Oakleigh Lane (5)
Sievers, Edward F., 635 Midland Ave. (5)
Signorelli, Andrew J., 2801 N. Taylor Ave. (15)
Silvermintz, Saul D., 626 Metropolitan Bldg. (3)
Simon, David Leo, 5535a Cabanne Ave. (12)
Simon, Jerome I., 830 Beaumont Medical Bldg. (8)
Simon, Selig, 4475 West Pine Blvd. (8)
Simpson, Eber, 3739 Gravois Ave. (16)
Simpson, Guy, 3833 Washington Ave. (8)
Sinner, Bernard L., 16 Hampton Village Plaza (9)
Sisk, James C., 3650 Dunnica Ave. (16)
Skeffington, Mary Jane, 3615 Olive St. (8)
Smith, William M., 3908 Olive St. (8)
Smith, Albert G., Duke Hospital, Durham, N. C.
Smith, B. F., Jr., 340 Beaumont Medical Bldg. (8)
Smith, Frank John, 4930 Lindell Blvd. (8)
Smith, Garland F., 418 Beaumont Medical Bldg. (8)
Smith, Herbert P., 5205a Chippewa St. (9)
Smith, Hugh R., 430 University Club Bldg. (3)
Smith, J. Earl, 4450 Westminster Pl. (8)
Smith, Milton, 830 Beaumont Medical Bldg. (8)
Smith, Reuben M., 4145 S. Grand Blvd. (18)
Smith, Robert M., 114 N. Taylor Ave. (8)
Smolik, Edmund A., 422 Beaumont Medical Bldg. (8)
Snyder, Edward N., 705 Olive St. (1)
Soper, Horace W., 634 N. Grand Ave.
Soule, Samuel D., 108 Lister Bldg. (8)
Spain, Kate C., 5321 Savoy Ct. (12)
Spaulding, Robert W., 6427 Clayton Rd. (17)
Spencer, Selden, 718 University Club Bldg. (3)
Spinzig, Edgar W., 5 Hawbrook Lane (22)
Spivy, Raymond M., 502 Beaumont Medical Bldg. (8)
Spoeneman, Walter H., 1506 St. Louis Ave. (6)
Stacey, Wallace R., Independence
Stahl, P. D., 301 Pasteur Bldg. (8)
Stahler, John C., Dayton, Ohio
Stanze, Frank J., 3924 S. Grand Blvd. (18)
Starkloff, Gene B., 929 University Club Bldg. (3)
Starkloff, Max, 512 Dover Pl. (11)
Stearns, Colby S., 649 Yeddo Ave. (19)
Stecker, George, 617 Missouri Theatre Bldg. (3)
Stein, Arthur W., 3606 Gravois Ave. (16)
Steinberg, Franz U., 462 N. Taylor Ave. (8)
Steiner, Albert S., 308 N. Sixth St. (1)
Stephens, LeRoy J., 218 Sylvester Ave. (19)
Stephens, Louis F., 4979a Chippewa St. (9)
Stephenson, Hugh E., Jr., 303 E. 20th St., New York, N. Y. (3)
Stevens, Robert W., 1222 Missouri Theatre Bldg. (3)
Stewart, Floyd, 1507 Chemical Bldg. (1)
Stewart, John W., 4660 Maryland Ave. (8)
Stindel, Charles E., 341 Violet Lane (19)
Stock, Albert Edward, 235 Papin Ave. (19)
Stolar, Jacob, 603 Metropolitan Bldg. (3)
Stone, Charles A., 912 Beaumont Medical Bldg. (8)
Stone, Edna M., 4916 Odell Ave. (9)
Stranz, Roman J., 4500a Virginia Ave. (11)
Strauss, Arthur E., 601 Humboldt Bldg. (3)
Striegel, B. F., 1875 Madison St. (6)
Strub, Giles J., Amarillo A. F. B., Amarillo, Texas
Stryker, Garold V., 1144 Missouri Theatre Bldg. (3)
Stubbs, James B., Galveston, Texas
Stude, William Carl, 16 Hampton Village Plaza (9)
Stutsman, Albert C., 640 Beaumont Medical Bldg. (8)
Sudholt, Alfred F., Jr., 457 N. Kingshighway Blvd. (8)
Sullivan, Clement J., 4161 Lindell Blvd. (8)
Sunderman, Raymond C., 4943 Natural Bridge Ave. (15)
Susanka, William Dee, 10061 Lakeside Dr. (23)
Sweet, Herbert C., 5616 Maxwell Ave. (23)
Swekosky, Frank J., 2528 S. Jefferson Ave. (4)
Tainter, Frank J., 401 Humboldt Bldg. (3)
Talbott, Hudson, 427 Metropolitan Bldg. (3)
Tanaka, George M., 1205 Blackstone Ave. (12)
Tapper, Stephen M., 1010 Paul Brown Bldg. (1)
Tate, Lloyd L., 901 Washington Ave. (1)
Taussig, Barrett L., 316 Lister Bldg. (8)
Tess, Melvin, 4118a West Florissant Ave. (15)
Thale, Thomas, 227 Hampton Village Plaza (9)
Thieme, Harry L., 306 Metropolitan Bldg. (3)

Thoma, George E., Jr., Randolph Field, Texas
Thomas, Charles S., 644 Frisco Bldg. (1)
Thompson, Arthur M., 1242 Missouri Theatre Bldg. (3)
Thompson, J. William, 4952 Maryland Ave. (8)
Thompson, Lawrence D., 542 Missouri Theatre Bldg. (3)
Thompson, Ralph L., 601 University Club Bldg. (3)
Thurston, Don L., 21 Cambridge Ct. (22)
Thym, Henry P., 514 Metropolitan Bldg. (3)
Tichenor, Robert W., Sappington, Mo.
Tindall, Robert N., 16 Hampton Village Plaza (9)
Titterington, Paul F., 211 Metropolitan Bldg. (3)
Tjoflat, Oliver E., 4224 N. Grand Blvd. (7)
Tobias, Norman, 700 S. Meramec Ave. (5)
Todd, D. Clay, 322 University Club Bldg. (3)
Tomlinson, William Loren, 4520 Forest Park Ave. (8)
Tonelli, George L., 513 Wall Bldg. (8)
Tooker, Charles W., 1005 Carleton Bldg. (1)
Torin, Bernice A., 209 Lister Bldg. (8)
Treiman, Robert C., 7369 Maryland Ave. (5)
Tremain, I. G., 4448 Shaw Ave. (10)
Trigg, Joseph F., 233 Metropolitan Bldg. (3)
Tripodi, Anthony M., 1603 N. Proctor St., Tacoma, Wash. (6)
Trotter, Francis O., Jr., 1015 Missouri Theatre Bldg. (3)
Turner, Rush, 1251 Blackstone Ave. (12)
Twedell, Donald L., 4143a N. Newstead Ave. (15)
Tyzzer, Robert N., 6091 Bellevue Ave., La Jolla, Calif.
Uhlemeyer, Henry A., 73 Bellerive Acres
Uhlemeyer, Henry A., Jr., 73 Bellerive Acres (21)
Unterberg, Hillel, 325 Frisco Bldg. (1)
Vandover, John T., 3503 Crittenden St. (18)
Van Vranken, Eugene E., Address unknown
Van Wetzinga, R. J., Bettondorf, Iowa
Vatterott, Paul B., Rt. 2, Box 630B (24)
Vaughan, J. Russell, 1122 Missouri Theatre Bldg. (3)
Vaughn, A. N., 11 N. Jefferson Ave. (3)
Veeder, Borden S., 816 Beaumont Medical Bldg. (8)
Venable, Howard P., 11 N. Jefferson Ave. (3)
Verda, Dominic J., 400 Lister Bldg. (8)
Vermillion, Crofford O., 600 S. Kingshighway Blvd. (10)
Vezeau, Stephen, 1504 S. Grand Blvd. (4)
Vinson, T. Chalmers, Vets. Adm. Hosp., Big Springs, Texas
Virant, John A., 2 Picardy Lane (5)
Vitt, Alvin E., 4161 Lindell Blvd. (8)
Vitt, Edwin F., 16 Hampton Village Plaza (9)
Viviano, Joseph G., 16 Hampton Village Plaza (9)
Vivona, Stefano, Brookline, Mass.
Vogel, Eugene A., 3325 S. Grand Blvd. (18)
Vogt, William H., Jr., 330 Metropolitan Bldg. (3)
Vohs, Carl F., 610 Metropolitan Bldg. (3)
Von Kaenel, Joseph E., 551 Barnes Rd. (5)
Vournas, Christopher G., 201 Humboldt Bldg. (3)
Wade, James P., 1004 Missouri Theatre Bldg. (3)
Wagenbach, William F., 4717 Morganford Rd. (16)
Waickman, Francis J., 6901 Plymouth Ave. (14)
Wall, Emmett D., 6270 Walsh Ave. (9)
Wallace, Edgar S., 718 University Club Bldg. (3)
Wallace, M. Marvin, 5241 Cote Brilliante Ave.
Wallach, Elliot A., 462 N. Taylor Ave.
Walsh, Theodore E., 640 S. Kingshighway Blvd. (10)
Walters, Harold E., 720 Metropolitan Bldg. (3)
Walters, Laura, 4105 Magnolia Ave. (10)
Walters, William H., 3608 S. Grand Blvd. (18)
Walton, Clifford L., Jr., Knoxville, Tenn.
Walton, Franklin E., 602 S. Euclid Ave. (10)
Warner, George K., Seattle, Wash.
Warner, Robert G., 1115 Paul Brown Bldg. (1)
Wasserman, Helman C., 108 Lister Bldg. (8)
Wattenberg, Carl A., 49 Kingsbury Pl. (12)
Watts, Byron E., 1436 S. Elm Ave.
Wayland, Thomas A., 3201a S. Grand Blvd. (18)
Webb, Lewis M., 11 S. Lake Forest (17)
Webb, Marion A., 221 Lister Bldg. (8)
Webb, Paul B., 1915a Sidney St. (4)
Webb, Paul K., 1508 Chemical Bldg. (1)
Webb, Watts R., 7 Faculty Lane
Weber, Eugene P., 601 Beaumont Medical Bldg. (8)
Weber, Sol, 336 University Club Bldg. (3)
Wegner, Carl R., 630 S. Kingshighway Blvd. (10)
Weiler, Thomas J., Missouri Theatre Bldg. (3)
Weinel, Francis G., 5205 Chippewa St. (9)
Weinhaus, Robert S., 507 Metropolitan Bldg. (3)
Weinsberg, William C., 3606 Gravois Ave. (16)
Weintraub, Solomon A., 208 Lister Bldg. (8)
Weir, Don C., 606 Missouri Theatre Bldg. (3)
Weir, Royal A., 462 N. Taylor Ave. (8)
Weis, Matthew W., Missouri Theatre Bldg. (3)
Weiss, Richard S., 940 Beaumont Medical Bldg. (8)
Weiss, William, 5705 S. Grand Blvd. (11)
Welborn, William S., 6811a Washington Ave. (5)
Welch, Hooper W., 630 Missouri Theatre Bldg. (3)
Welsh, Laurence C., 4989 Neosho St. (9)
Wennerman, Sam F., 1045 Missouri Theatre Bldg. (3)
Wentzel, Louis R., 2726 Chouteau Ave. (3)
Wenzel, Peter S., 310 Pasteur Bldg. (8)
Werner, August A., 404 Humboldt Bldg. (3)
Werner, William A., 16 Hampton Village Plaza (9)
Westerman, Henry C., 7160 Princeton Ave. (5)
Westlake, Samuel B., 309 Beaumont Medical Bldg. (8)
Westphaelinger, Henry F., 1901 Alfred Ave. (10)
Weyerich, Leon F., 8321 N. Broadway (15)
White, Charles A., 319 Metropolitan Bldg. (3)
White, Orville O., 1194 Hodiamont Ave. (12)
White, Park J., 337 N. Euclid Ave. (8)
White, T. Wistar, 220 Lister Bldg. (8)
White, W. H., 2801 N. Kingshighway Blvd. (15)
White, W. H., Jr., 214 Lister Bldg. (8)
Wiatt, William S., Box 1082, La Jolla, Calif.
Wiegand, Herbert C., 840 Oakbrook Lane (5)
Wiener, Meyer, Box 685, Coronado, Calif.
Wiese, Harry W., 2301 S. Kingshighway Blvd. (10)
Wilcox, Claude V., 3175 Ivanhoe Ave. (9)
Wild, Aloysius A., 3901 West Florissant Ave. (7)
Wilhelmi, Otto J., 218 University Club Bldg. (3)
Will, Leo A., Humboldt Bldg. (3)
Williams, Ray D., 114 N. Taylor Ave. (8)
Williamson, Walter E., 233 Frisco Bldg. (1)
Wilson, Henry M., Veterans Hospital, Alexandria, La.
Wilson, Hugh M., 510 S. Kingshighway Blvd. (10)
Wilson, Joseph N., 807 Clara Ave. (12)
Wilson, Keith S., 4952 Maryland Ave. (8)
Wilson, Kenneth O., 1259 N. Kingshighway
Wilucki, Leo E., 5402a Gravois Ave. (16)
Wilucki, Melvin R., 5402a Gravois Ave. (16)
Wimber, Thomas C., 626 Metropolitan Bldg. (3)
Winkler, L. F., U. S. Army Hospital, Fort Leonard Wood, Mo.
Winter, Tyrus D., 208 Lister Bldg. (8)
Winterer, Roland A., Zinzer Pl., Rt. 2 (23)
Wippo, Edgar W., 4600a Moraine Ave. (15)
Wirthlin, Edward H., 4143 S. Grand Blvd. (18)
Wissner, Seth, 8109 Glen Echo Dr. (21)
Witt, Clyde M., 4239 Neosho St. (16)
Wittwer, Hugh J., 5940 Marwinette Ave. (16)
Womble, James G., Augusta, Ga.
Wood, Bennett R., 3442 Geraldine Ave. (15)
Wood, Gary G., Wichita, Kan.
Wood, William George, 1001a McCausland Ave. (17)
Woodruff, Frederick E., 4 Kingsbury Pl. (12)
Woolf, Ralph B., 630 S. Kingshighway Blvd. (10)
Woolsey, Doris S., 11 Schlutz Rd. (22)
Woolsey, Robert D., 16 Hampton Village Plaza (9)
Wotawa, William J., 3804 Wilmington Ave. (16)
Wulff, George J. L., Jr., 530 Beaumont Medical Bldg. (8)
Yaeger, Gerald A., 7158 Manchester Ave.
Young, Leo P., 2621 S. Jefferson Ave. (18)
Young, Lillian V., 819 E. Central Ave., Redlands, Calif.
Younge, Walter A., 2337 Market St. (3)
Younger, Anita, 3624 Russell Ave. (10)
Younger, Ernest, 3624 Russell Ave. (10)
Younger, Jesse, 8325 Delcrest Dr. (24)
Youngman, George A., 5439 Gravois Ave. (16)
Zahorsky, John, Steelville, Mo.
Zahorsky, Theodore S., 16 Hampton Village Plaza (9)
Zahtz, Hyman, 974 47th St., Brooklyn, N. Y. (19)
Zeinert, Oliver B., 7246 Pershing Ave.
Zeitler, William T., 3102 S. Grand Blvd. (18)
Zentay, Paul J., 1027 Missouri Theatre Bldg. (3)
Ziegelmeyer, John S., 3733 Lindell Blvd. (8)
Zillgitt, George H., 4501a Manchester Ave. (10)
Zingale, Frank G., 16 Hampton Village Plaza (9)
Zink, Oscar C., 9 The Orchards (5)
Zwart, Claude H., 719 Missouri Theatre Bldg. (3)

ST. LOUIS COUNTY MEDICAL SOCIETY
(St. Louis)

Alex, Morris, 539 N. Grand Ave.
Altheide, Harvey E., 9621 Manchester, Rock Hill
Armstrong, John H., 321 N. Kirkwood Rd., Kirkwood
Avery, Bruce F., 16 Hampton Village Plaza
Aylward, H. J., 805 N. Yakima Ave., Yakima, Wash.
Backlar, Joseph, 4914 Gravois
Bailey, Wm. Harold, 634 N. Grand Ave.
Barnes, Francis M., 4952 Maryland Ave.
Barnes, Raymond F., 22 N. Elm Ave., Webster Groves
Barnett, Julian H., 243 W. Jefferson, Kirkwood
Bassett, Sam A., 1200 Big Bend, Richmond Heights
Bauer, Robert A., 6153 Natural Bridge
Beasley, L. Kenneth, 16 Hampton Village Plaza
Beers, Robert G., 115 Glen Rd., Webster Groves
Bennett, C. Edward, 751 Chamberlain Pl., Webster Groves
Berger, Edward J., 457 N. Kingshighway
Bernstorff, Paul H., 8330 Jennings Rd., Jennings
Berwald, Irwin I., 4155 N. Newstead
Bierman, Martyn H., 15 Bluff Rd., Council Bluffs, Iowa

Blackman, Nathan, 4500 Olive St.
Boles, Clifford R., 35 N. Central Ave., Clayton
Bortnick, Arthur, 634 N. Grand Ave.
Brand, Earl L., 120 E. Lockwood Ave., Webster Groves
Briscoe, John R., 2648 Oakview Ter., Maplewood
Brossard, Pierre M., 3500 Cambridge Ave., Maplewood
Brown, Eugene R., 7433 Gannon Ave., University City
Brown, Wm. Sidney, 410 Wall Bldg.
Brown, Wilson G., Hermann Hospital, Houston, Texas
Bukantz, Sam C., 34 Marshall Pl., Webster Groves
Buford, Thomas H., Route 1, Clayton
Bussmann, Donald W., 908 Crescent Dr., Clayton
Canepa, Francis J., 462 N. Taylor Ave.
Canepa, John B., 2105 S. Broadway
Clark, Clarence, 219 W. Kent Rd., Duluth, Minn.
Cohle, Richard R., 6328 Washington, University City
Coldwater, Kenneth B., V. A. Hospital, Jefferson Barracks
Coleman, Wm. G., 3903 Olive St.
Colgate, Cleon E., Veterans Administration, Amarillo, Texas
Compton, James R., 6122 Page
Cone, Alfred J., 453 N. Taylor Ave.
Cook, Robert J., 8529 Douglas Ave., Brentwood
Cooke, Jean V., 6130 Garesche Ave.
Costrino, Joseph A., 2407 N. Broadway
Cutler, Harry, 607 N. Grand Ave.
Daly, John R., 1800 Sidney St.
Davidson, Morris, 35 N. Central, Clayton
Davis, Edgar W., 3805 S. Broadway
Davis, Irl R., 1492 Hodiamont St.
Denny, Chester H., Creve Coeur
Denny, Robert B., 7127 Delmar, University City
Diehr, Maurice A., 8924 St. Charles Rd.
Dill, Foster A., 7348 Manchester, Maplewood
Domke, Herbert R., 651 S. Brentwood, Clayton
Donley, Leo F., 2739 N. Grand Ave.
Dowd, James F., 3720 Washington Ave.
Drescher, Emmett B., 3720 Washington Ave.
Drum, Helen M. A., 1927 Union Blvd.
Dulick, Michael, 9012 Manchester Rd., Brentwood
Dyer, C. P., 508 N. Grand Ave.
Ellis, Calvin C., 16 Hampton Village Plaza
Ellison, Leroy E., 3610 S. Broadway
Elson, Julius, 607 N. Grand Ave.
Emery, Edgar V. N., 4668 Pershing Ave.
Evans, Emery E., 6121 Easton
Farris, H. G., 4660 Maryland Ave.
Ferrara, John P., 7307 Natural Bridge
Fingert, H. H., 4952 Maryland Ave.
Finkel, Barney W., 6510 W. Florissant
Finley, Freeman L., 9416 Lackland Rd., Overland
Fletes, James W., 6900 Clayton Rd.
Flynn, George W., 6153 Natural Bridge
Forbes, Gilbert B., Southwestern School of Medicine, Dallas, Texas.
Forsman, Waldo W., 9436 Gravois, Affton
Foster, Robert L., 3548 S. Grand Ave.
Franklin, Harold A., 4409 W. Pine St.
Freiheit, Harold J., 1325 S. Grand Ave.
Froelich, Edwin J., 3635 N. Newstead
Fuchs, George J., 608 Kingsland
Gage, Helen L. B., 16 N. Gore Ave., Webster Groves
Gaines, Quentin M., 508 N. Kirkwood Rd., Kirkwood
Gaston, Ralph E., 886 Alanson Dr., University City
Gaunt, Frank P., 12 N. Gore, Webster Groves
Gebert, Clara M., Valley Park
Gitt, Joseph J., 2615 Olive St.
Goldman, Hyman J., 440 N. Taylor
Goodman, J. N., 9 Frederick Lane, Glendale
Goodman, Nathaniel, 4007 W. Florissant Ave.
Goodrich, Harold A., 19 E. Lockwood Ave., Webster Groves
Gowen, Leo F., 337 W. Lockwood, Kirkwood
Graeser, Richard G., 306 E. Jefferson Ave., Kirkwood
Gray, Walter C., 8938 St. Charles Rd.
Green, Manuel E., 114 N. Main St., St. Charles
Gregory, Jack A., 100 Congress St., Pasadena, Calif.
Griot, Albert J., 3109 S. Grand Blvd.
Gronau, Alex R., 634 N. Grand Ave.
Groom, Horace E., 1359 McCutcheon Rd., Richmond Heights
Grosskreutz, Joseph A., 3601 Canna Dr.
Grundman, Wm. H., 3118 N. Grand Ave.
Hageman, Paul O., 3720 Washington Ave.
Hale, Tyre H., 4903 Delmar Ave.
Hall, Eugene W., 25 S. Florissant, Ferguson
Halpern, Lawrence K., 462 N. Taylor Ave.
Hamilton, Caldwell K., 35 N. Central, Clayton
Hampton, Oscar P., 3720 Washington Ave.
Hamtil, Edward W., 1504 S. Grand Ave.
Hanlon, Thomas J., V. A. Hospital, Muskogee, Okla.
Hans, Willard J., 4335 Virginia Ave.
Hanser, Otto C., 3012 Lafayette St.
Hardy, Guerdan, 3720 Washington Ave.
Harrison, Stanley L., 453 N. Taylor Ave.
Harvey, Alexander E., Kankakee, Ill.
Heid, Lloyd L., 2739 N. Grand Ave.
Heideman, Milo L., 508 N. Grand Ave.
Helbing, Edward J., 3903 Olive St.
Hendin, Aaron, 457 N. Kingshighway
Hengen, Henry E., Pattonville
Hertel, Albert L., 3606 Gravois
Hobbs, Alonzo G., 3903 Olive St.
Hobbs, Clarence, 409 Chemical Bldg.
Hobbs, John E., 630 S. Kingshighway
Hofsommer, Armin C., 337 W. Lockwood, Webster Groves
Holscher, Edward C., 3720 Washington
Howe, Louis F., 2511 Brentwood Blvd., Brentwood
Huck, Frank F., Fenton
Hughes, Clarence O., 9 S. Florissant Rd., Ferguson
Irick, Carl C., 227 E. Lockwood Ave., Webster Groves
Jacobs, Gustave E., 539 N. Grand Ave.
Jansen, Richard W., 1538 Market St.
Jensen, Julius, 3720 Washington Ave.
Johnson, Roy, 40 N. Florissant Rd., Ferguson
Jolly, Wm. Hardin, Mexico
Jones, Augustin, 35 N. Central Ave.
Jones, Dorothy J., 4500 Olive St.
Jones, Garnett, St. Clair
Jones, James B., 337 W. Lockwood, Kirkwood
Karn, Robert B., 2002 S. Broadway
Kelley, Walter L., 9919 Gravois Rd., Affton
Kendis, Joseph B., 462 N. Taylor Ave.
Kent, Leonary, Van Nuys, Calif.
Kessler, Joseph J., 3504 W. 14th St.
Kilker, Clarence H., 3121 N. Grand Ave.
Kilker, Donald E., 3121 N. Grand Ave.
Kinelman, Nathan, 3409 Union Blvd.
King, Eustace E., 2114 E. Grand Ave.
Kingsland, Robert C., 31 N. Brentwood, Clayton
Kloecker, Herman J., 96521 Lackland Rd., Overland
Kloeppel, Carl F., 905 Morrison
Kock, Otto W., 35 N. Central, Clayton
Koch, Robert E., 35 N. Central, Clayton
Koessel, Arthur W., 634 N. Grand Ave.
Konzelman, John A., 6677 Delmar Ave.
Kopp, Jules H., 508 N. Grand Ave.
Kotner, Irvin A., 4409 W. Pine Blvd.
Kuhl, Robert H., St. Louis County Hospital, Clayton
Kuritz, Albert B., 1818 W. Capitol, Little Rock, Ark.
Leidler, Franz, 707 N. Forest Ave., Webster Groves
Lerner, Abe F., 1259 N. Kingshighway
Leslie, Charles H., 209 S. Kirkwood Rd., Kirkwood
Levey, Simon A., 7807 Walinca Terrace
Lewin, Wilbur H., Frisco Bldg.
Loving, B. Rush, Ballwin
Luckey, Horace L., 2816 Sutton Ave., Maplewood
Luedde, Fullerton W., 35 N. Central, Clayton
McCall, Edwin L., 9012 Manchester Rd.
McCarthy, Thomas D., 607 East Dr.
McCaughan, John M., 539 N. Grand Ave.
McGlew, James A., Lemay
McLean, Royal C., 126 E. Jefferson Ave., Kirkwood
McNalley, Frank P., 3720 Washington Ave.
McNearney, Joseph, 7308 Glades
McShane, Quentin W., 4500 Olive St.
Macdonald, Wm. C., 539 N. Grand Ave.
Magidson, Joseph, 520 W. Gate St.
Magness, Guy N., 6651 Enright St.
Manganaro, Frank J., 508 N. Grand Ave.
Marcus, Morris D., 607 N. Grand Ave.
Marmor, Wm. A., 607 N. Grand Ave.
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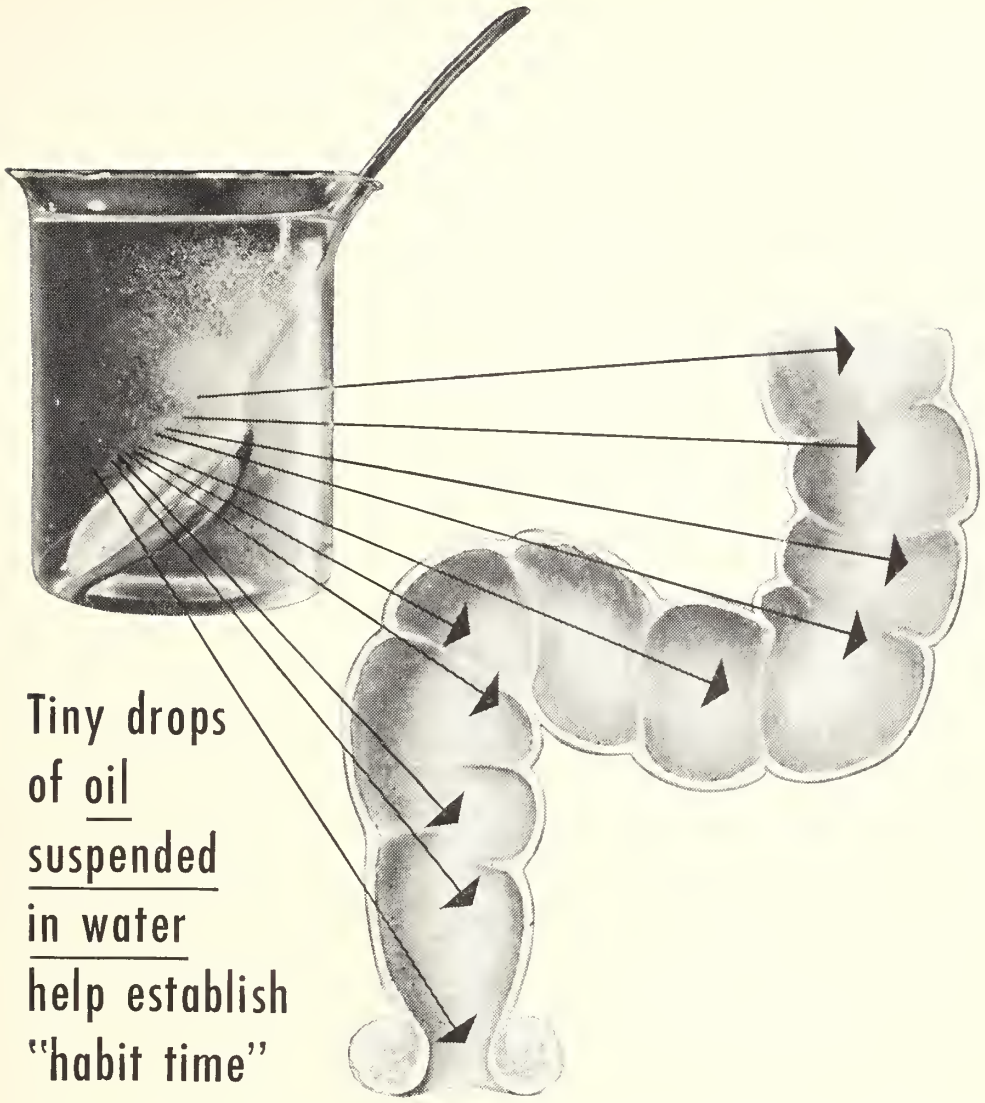
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BOOK REVIEW

Master Your Mind, by Samuel Kahn, M.D., Ph.D. Rockport Press, Inc., New York, New York. 1951.

This is a trite and verbose book dealing essentially with how to study. The best chapter is "Advice on How to Study" which quotes a lecture by a high school teacher and a pamphlet by a university professor on the same subject. The poorest is the final one, "Failure and Success" which covers the entire field of child development and guidance in fifteen pages. I cannot see that the book has any particular place in a medical library. M. E. M.



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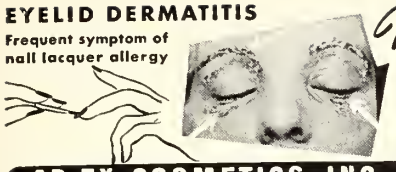
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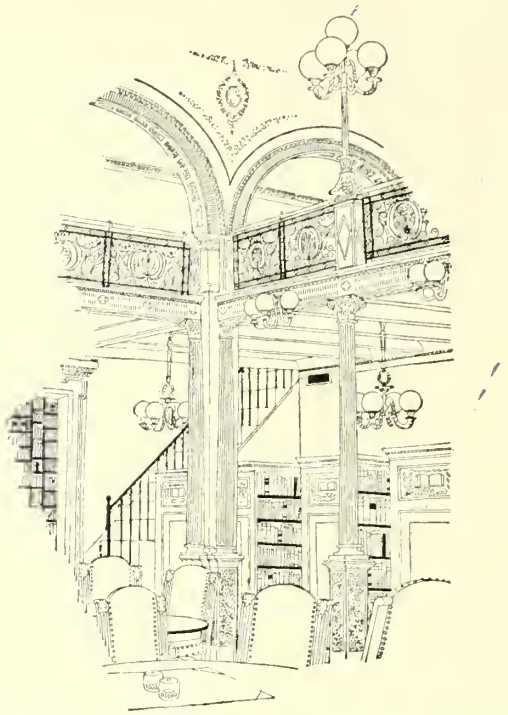
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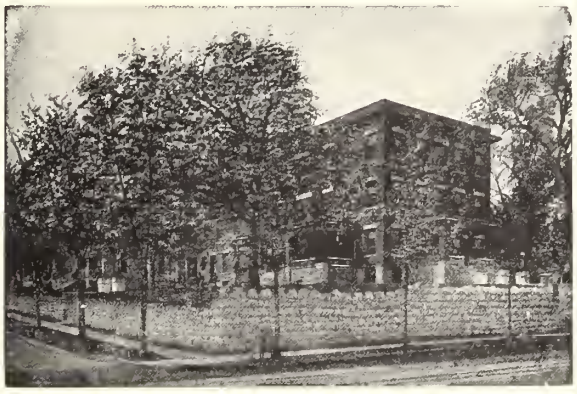
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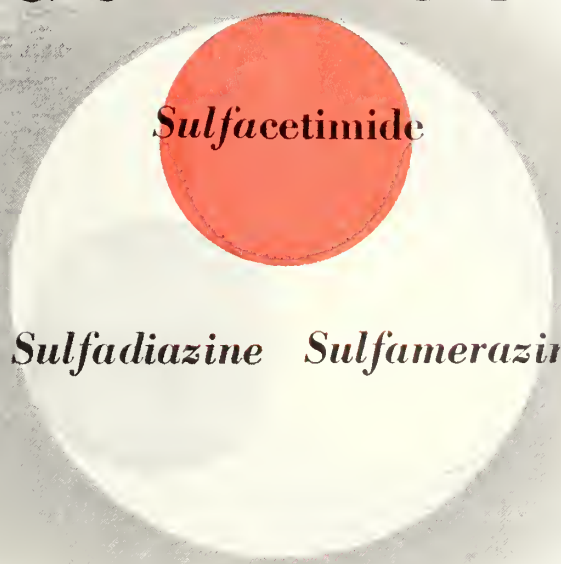
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Benton	6	T. S. Reser	Cole Camp	James A. Logan	Warsaw
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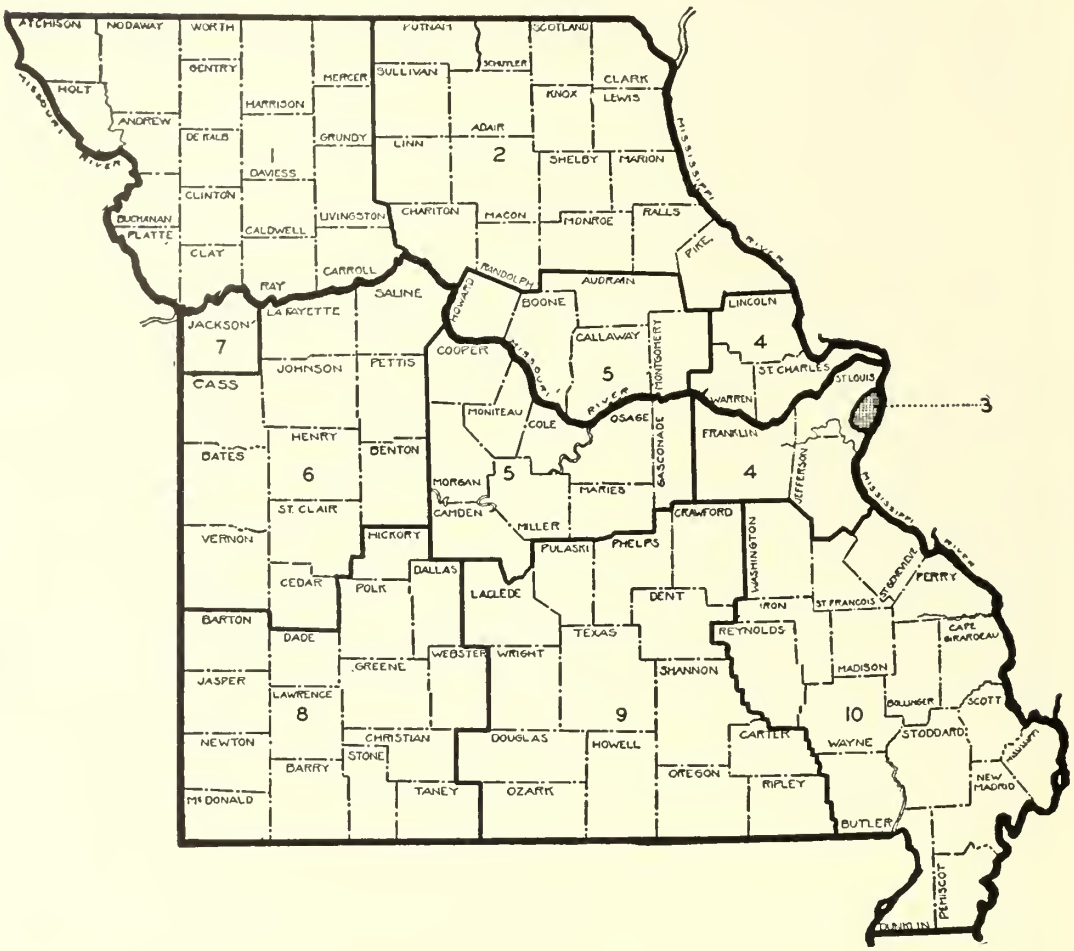
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Ward, L. E., Slocumb, C. H., Polley, H. F., Lowman, E. W., and Hench, P. S.: *Proc. Staff Mtgs., Mayo Clinic* 26: 361, September 26, 1951.

Literature on Request

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Meat and its Important Contribution of Essential Minerals

With the exception of calcium and iodine,[1] meat, as customarily consumed, makes an important contribution to the mineral needs of the American people. Its minerals include those needed in substantial amounts as well as those needed in trace amounts only.

The array of data listed below gives the approximate amounts of essential minerals provided by muscle meat when seven ounces per day are consumed.[1] The minerals include those now known to be essential components of the human organism—the skeletal framework and teeth, soft tissue structures including blood, and substances concerned in regulatory functions.

APPROXIMATE MINERAL CONTENT OF MEATS

200 Gm. (approx. 7 oz.),[1] Edible Portion (Uncooked)

	Beef Round	Lamb Leg	Pork Loin	Veal Shoulder
Minerals, total[2]	2.0 Gm.	1.8 Gm.	1.8 Gm.	2.0 Gm.
Calcium[2]	22 mg.	20 mg.	20 mg.	22 mg.
Chlorine[3]	147 mg.	136 mg.	125 mg.	147 mg.
Copper[3]	0.2 mg.	0.2 mg.	0.2 mg.	0.2 mg.
*Iodine[4] (Ohio animals)	0.02 mg.	0.03 mg.	Data not available	0.01 mg.
Iron[2]	5.8 mg.	5.4 mg.	5.0 mg.	5.8 mg.
Magnesium[3]	46 mg.	42 mg.	39 mg.	46 mg.
Phosphorus[2]	360 mg.	426 mg.	372 mg.	398 mg.
Potassium[3]	661 mg.	610 mg.	559 mg.	661 mg.
Sodium[3]	164 mg.	152 mg.	139 mg.	164 mg.
†Cobalt[5]	0.0002 mg.	———	Data not yet available	———
†Manganese[3]	0.03 mg.	0.03 mg.	0.02 mg.	0.03 mg.
†Zinc[5]	9.4 mg.	———	Data not yet available	———

*Iodine content of meat varies with the iodine content of feed of the animals.
†Needed in trace amounts only.

The average values for iron, phosphorus, and copper of the four kinds of meat shown constitute about 46, 25, and 100 per cent, respectively, of the National Research Council's recommended daily allowances for adults, and the average values for chlorine, potassium, and sodium constitute about 14, 63, and 16 per cent, respectively, of the estimated daily adult needs, as based on mineral balance studies.[6] Although no specific information is available on the quantitative needs for cobalt, magnesium, manganese, and zinc, nutrition information would suggest that the amounts reported above have nutritional importance or significance.

In addition to its notable content of essential minerals, meat also furnishes large amounts of biologically complete protein and important amounts of vitamin B complex, which includes biotin, choline, folic acid, inositol, niacin, pantothenic acid, pyridoxine, riboflavin, thiamine, and vitamin B_{12}. On the basis of its rich contribution of nutritional essentials, meat well deserves its prominent place in the daily diet of the American people, the world's best-nourished people.

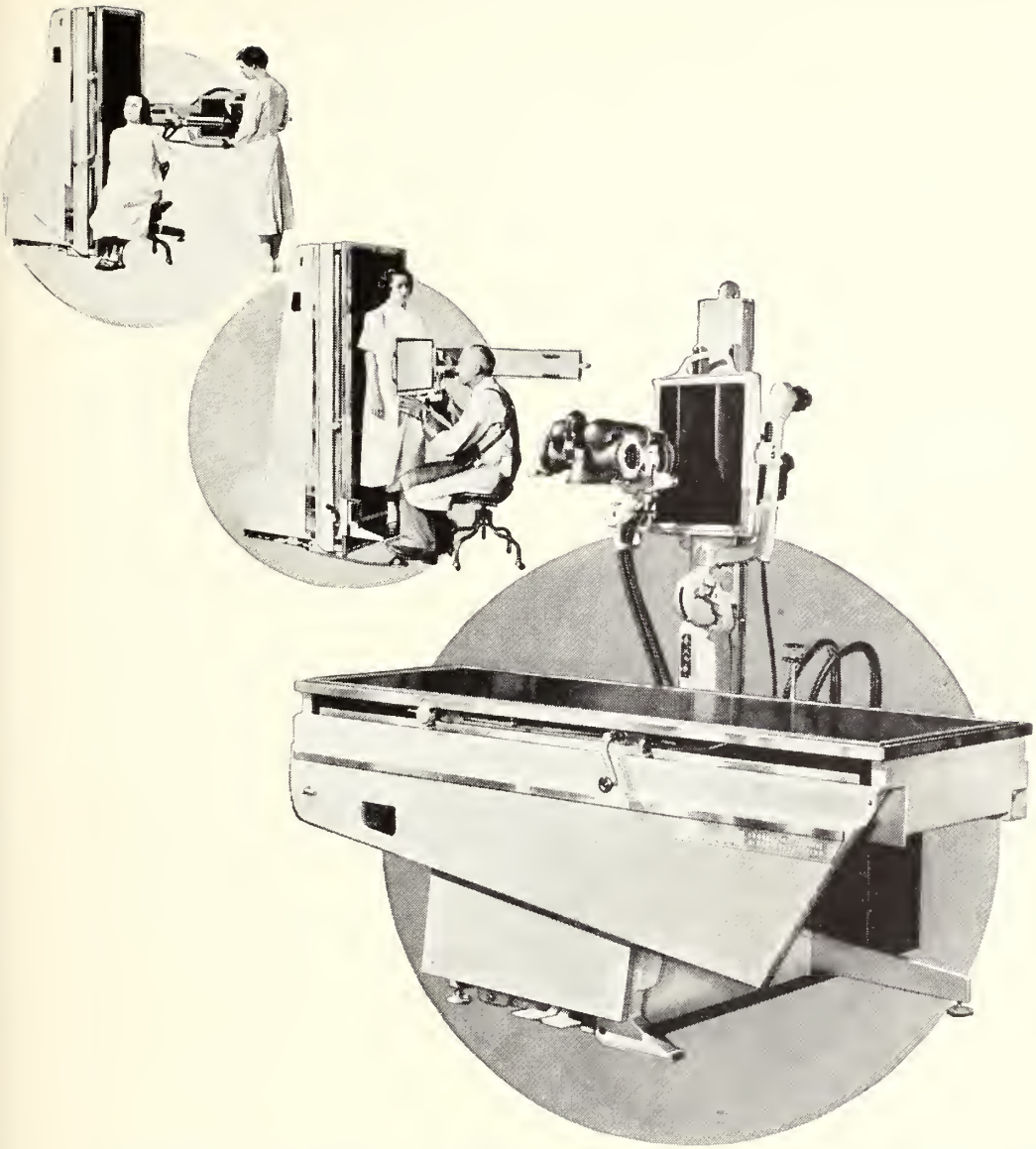
1. Recent estimates of the U. S. Department of Agriculture indicate that the per capita consumption of meat in the United States approaches seven ounces per day.
2. Watt, B. K., and Merrill, A. L.: Composition of Foods —Raw, Processed, Prepared, In Agriculture Handbook No. 8, United States Department of Agriculture, 1950.
3. Estimated on basis of protein content of meats. Sherman, H. C.: Food Products, ed. 4, New York, The Macmillan Company, 1948, p. 155.
4. Ohio animals; varies with iodine content of feed. Johnson, H. J.: Bridges' Dietetics for the Clinician, ed. 5, Philadelphia, Lea & Febiger, 1949, p. 800.
5. Mitteldorf, A. J., and Landon, D. O.: Analytical Chemistry; Spectrochemical Analysis of Beef for Mineral-Element Content, Armour Research Foundation of Illinois Institute of Technology. In Press.
6. Dauphinee, J. A.: Sodium, Potassium, and Chloride Malnutrition, Including Water Balance and Shock, in Jolliffe, N.; Tisdall, F. F., and Cannon, P. R.: Clinical Nutrition, New York, Paul B. Hoeber, Inc., 1950, p. 341.

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Volume 49 March, 1952 Number 3

Symposium on Poliomyelitis

POLIOMYELITIS

THIS POSTGRADUATE seminar on the treatment of poliomyelitis was presented at the third annual Polio Institute held at St. Anthony's Hospital, May 17-19, 1951. This Institute was sponsored jointly by the St. Louis Medical Society, the St. Louis County Medical Society, the National Foundation for Infantile Paralysis, the St. Louis and St. Louis County chapters of the National Foundation and St. Anthony's Hospital. The keynote of the Institute was the essential basic and practical data for the use of the general practitioner, pediatrician, internist, orthopedist and others interested in the care of poliomyelitis patients.

THE MANAGEMENT OF ACUTE POLIOMYELITIS

JOSEPH J. MUENSTER, M.D.
ST. LOUIS

THE PRINCIPLES of management during the acute phase of poliomyelitis may be divided into two major categories: (1) careful and constant observation and (2) supportive and symptomatic therapy. Since there is no specific therapeutic agent against the virus itself, one must concern himself primarily with the maintenance of as near normal physiology as possible during the activity of the infectious process in order to prevent those states which enhance the severity of the clinical syndrome and, indeed, which can enhance the pathologic process itself.

Progression of the infectious process and its clinical manifestations ordinarily ceases when the patient's temperature returns to normal, or soon thereafter. Hence, for the patient who has not developed signs of respiratory difficulty or cranial nerve involvement, the acute or critical phase may be said to end at that time. However, the acute or critical phase of the disease, for the patient with respiratory difficulty or bulbar signs, must be considered to extend to the time when he is safely out of the respirator for the greater part of the day and when cranial nerve signs have largely disappeared.

A comprehensive review of the literature is not within the scope of this paper. The material for this discussion is derived from some of the more recent work which has been published and from the experiences of the staff of the Communicable Disease Service of the St. Louis City Hospital during the summer of 1949 when one hundred and sixty-eight acute cases were treated.

The Poliomyelitis Ward and Staff.—The management of each patient should, of course, be individually considered. However, poliomyelitis, like tuberculosis, requires a certain amount of routine policy for its management. The responsibility for making decisions and outlining the patients' care should rest with one person who is in charge of the entire ward. The best interests of the patients are not served by having them managed variously by a number of individual physicians. However, the director of a poliomyelitis ward and his staff should not be wholly independent and separated from the remainder of the hospital staff. They should have readily available and should utilize the consultant services of the otolaryngologist, the pediatrician and the orthopedist. Hence, a poliomyelitis service must be a part of an active general hospital. Complete clinical laboratory facilities, x-ray and pathology service are indispensible.

Careful and constant observation during the time when the disease process is still progressive or not yet definitely stabilized is necessary. A nurse should be in constant attendance in each room containing from six to eight such patients. She is charged with the duty of noting changes in the patient's temperature, pulse, the rate, rhythm and depth of respiration, and changes of blood pressure. She should be particularly watchful for changes in the patient's color, the onset or progression of irritability, restlessness, euphoria and mental depression which are some

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of the more subtle signs of early hypoxia. A member of the resident medical staff should make hourly checks of these patients; noting and evaluating the findings of the nurse and inspecting for the onset or progression of paralysis, difficulty in swallowing, pooling of secretions in the pharynx, weakness of the voice or cry and testing for diaphragmatic excursion and intercostal muscle function.

Isolation and Quarantine.— The epidemiology of this disease and the means of transmission of the poliomyelitis virus are incompletely understood.[1] Since these facts are obscure, it is considered necessary that isolation technic be practiced in caring for these patients. The details of this technic will not be discussed; suffice it to say that the method ordinarily referred to as respiratory isolation, which includes the use of masks and gowns, should be used. An effort should be made to place patients in rooms on the ward according to the positiveness of the diagnosis. When this is done the technic of care, in the rooms of patients with unquestioned poliomyelitis, may be modified so that the nurse and doctor need not change gowns and sterilize their hands as they go from one patient to another in that room. Patients in whom other diagnoses must be excluded should be alone and complete isolation care observed.

The length of time that a patient should be confined on an isolation ward is also a controversial issue. Under ordinary circumstances and by custom, twenty-one days has been the designated period of time. However, this is not always possible during epidemic times when a hospital is faced with the problem of making room for large numbers of patients and the length of time must necessarily be shortened. This period of isolation probably should not be shorter than from ten to fourteen days total, or five to ten afebrile days.

Evaluation and care of paralysis.—Testing for the onset or spread of weakness and paralysis of extremities ought to be done only grossly. Testing of individual muscle groups is unnecessary during the acute phase and should be avoided because of the possibility of additional damage caused by exhaustion. With orthopedic consultation, gross deformities and paralyzed extremities are supported by foot boards, sandbags and plaster casts as indicated. Activity has definitely been shown to have a harmful effect during the active phase of the infection, resulting in greater incidence and degree of paralysis. Hence bed rest should be rigidly enforced, not only in already paralytic cases but also in the preparalytic and abortive cases.[2,3]

Urinary Retention.—Urinary retention is commonly seen in all age groups as a part of the disease syndrome. It is usually a transient phenomenon, lasting seldom longer than three or four days. Catheterization should be performed when absolutely necessary. This is not a frequent need, however, since almost all cases of urinary retention can be satisfactorily relieved by use of the parasympathomimetic drugs such as Furmethide or Doryl. Some patients require only a single dose of one of these drugs; others require that it be maintained for several days.

Pain and Spasm.—There are many therapeutic methods which have been used for the relief of pain and spasm which is frequently a part of the acute poliomyelitis syndrome. These methods include the use of hot moist applications to the painful or spastic region, and the use of drugs such as curare, prostigmine and more recently the sympatholytic drugs, Priscoline and intravenous procaine. The latter two drugs will be discussed briefly.

Harell, Mead and Mueller have gathered evidence to indicate that there is no actual spasm of skeletal muscle during the acute phase.[4] There is evidence that the pain, hyperesthesia and pseudo muscle spasm are due to involvement of the intermediolateral column and the ganglia of the sympathetic trunk by the infectious process[5] which causes sympathetic imbalance and consequent vasospasm.[6]

Smith, Graubard, Goldstein and Bikoff have reported encouraging results with procaine and Priscoline.[7]

During the summer of 1949 these two drugs were used at the St. Louis City Hospital. And while evaluation of results was made only superficially, largely on the basis of the subjective relief of the patients symptoms, it was found that Priscoline alone effected satisfactory relief in approximately three fourths of the patients treated. The remainder were relieved by intravenous procaine or by the two used together.

The dosage of Priscoline was approximately that described by Smith et al.[7] The course of treatment was started with an initial dose of from 15 to 25 mg. intramuscularly, and raised by 5 mg. with each four hour injection until the therapeutic response was observed. When there was a pronounced flush or nausea the dosage was reduced by 5 mg. and maintained at that level. The oral preparation may be used after the effective dosage is determined. The effective therapeutic dose varied considerably. Usually the effective dose for the adult is about 50 mg. every four hours and for children, from 25 to 35 mg. every four hours. Some of the younger cases, however, needed and tolerated dosage as large as 50 and 60 mg.

The dosage of intravenous procaine is based on the Procaine Unit.* After the initial infusion of one unit, under careful observation for untoward reactions, the usual dosage is a two or three unit infusion three times a day.

The severity and duration of pain and spasm

*The Procaine Unit is defined as 4 mg. per kilogram of body weight as a 0.1 per cent solution in normal saline to be delivered intravenously in a period of twenty minutes.[8]

varies greatly and much of it is of a subjective nature, hence the evaluation of results with a given form of therapy is difficult. It is not possible at this time to state to what extent these drugs will replace the classical hot packs or other drugs as the treatment of choice. These sympatholytic drugs, used separately or in combination, were adequate for needs in 1949 and none of the other means of management were found necessary. There was no incidence of untoward side effects with either drug severe enough to make discontinuation of treatment necessary.

Antibiotics and Nutrition.—Diets and oral fluids should be given as indicated and tolerated. Parenteral fluids should be used when necessary. Blood transfusions may be given when the patient's hemoglobin concentration is below normal and when a patient has been subsisting on parenteral fluids for a prolonged period of time. The hazards of giving whole blood transfusions to a febrile patient must be kept in mind. The use of whole blood, plasma or globulin fractions for specific antibody effect has not been scientifically substantiated.[9,10]

Penicillin or antibiotic combinations are given to patients with respiratory embarrassment or cranial nerve signs. Antibiotics should also be used in cases in which bacterial infection cannot be excluded or in which the fever, leukocytosis or spinal fluid cell count is considerably out of the range usually found in poliomyelitis.

MANAGEMENT OF BULBAR POLIOMYELITIS AND RESPIRATORY FAILURE

Hypoxia and increased blood carbon dioxide content are damaging states and must be combatted vigorously and specifically. This latter word is used advisedly because the pathogenesis of these conditions is not merely by one mechanism. Where more than one mechanism seems to be operating or where there is doubt, treatment should be directed toward all the possibilities.

The effect of anoxia, clinically and histologically, is well documented. There is a wealth of clinical and experimental data which indicates that much of the clinical manifestations and pathologic changes in the brain are due to anoxemia and increased carbon dioxide concentration, aggravating the damage initiated by the virus. In some instances oxygen want and excessive carbon dioxide may be the only damaging agent with little or no infectious process in the cerebrum or brain stem.[11,12,13,14,15] One episode of frank cyanosis for as short a time as one minute has been shown to cause definite histologic change in nervous tissue,[16] hence, the need for recognition and treatment of this state before cyanosis is evident.

The narcotizing effects of carbon dioxide were known as early as the beginning of the last century when it was advocated for use as an anesthetic.[17] That is depresses the cerebral cortex and medullary centers, causes respiratory depression and vasomotor failure and eventually circulatory collapse are well known facts. But the presence of increased carbon dioxide concentration in the poliomyelitis patient is oftentimes not suspected and, when these signs are seen, the virus frequently is considered to be the only culprit. In experimentally produced respiratory obstruction it has been demonstrated that carbon dioxide levels in the blood may reach dangerous levels while oxygen saturation is still normal.[18]

The mechanisms which produce hypoxia and increased blood carbon dioxide content may be divided into two categories: ventilatory deficiency and alveolar deficiency.[19] Ventilatory deficiency is due to (1) paralysis of the diaphragm or intercostal muscles or both. (2) primary involvement of the respiratory center and (3) obstruction of the upper airway. Alveolar deficiency is due to (1) pulmonary edema, (2) atelectasis and (3) pneumonia. Paralysis of the diaphragm and intercostal muscles is perhaps the mechanism most easily recognized. Vocal chord paralysis and paralysis of the tongue as causes of upper airway obstruction usually can be diagnosed readily. Accumulation of secretions in the pharynx due to difficulty in swallowing is another cause of upper airway obstruction and when these signs are quite obvious they are easily recognized. However, some patients who have secretions pooled in the pharynx splint their respiratory movements in order to avoid aspiration. This splinting of the diaphragm and intercostals may be mistaken for primary paralysis of these muscles and the upper airway obstruction missed completely. Other patients have an anesthesia of the pharyngeal or laryngeal mucosa and aspiration goes on continuously and secretions do not accumulate in the pharynx to be seen on inspection.

The diagnosis of the causes of alveolar deficiency also can be difficult. The reason for this difficulty is usually the circumstances under which physical examination has to be performed. These states are most often seen in conjunction with some degree of ventilatory deficiency and hence auscultation of the chest is not reliable. The patient is frequently already in a respirator, making adequate physical examination impossible. For the diagnosis of these conditions, one must rely almost wholly on the x-ray of the chest. With adequate assistance, almost all patients, including those in respirators, can be set up momentarily for a chest x-ray taken with portable equipment. Films made under these circumstances are not perfect technically, but usually are satisfactory for the purpose.

The treatment therefore is directed toward three objectives: providing a good concentration of oxygen, a patent airway and an adequate ventilatory excursion.

Oxygen Therapy.—Oxygen probably should be given in all cases of hypoxia, whatever the cause, in conjunction with whatever other measures

may be indicated. The early signs of hypoxia, as enumerated, are nonspecific. Every patient who is apprehensive, restless or irritable does not necessarily have hypoxia. However, a trial of oxygen therapy in such cases is well worth while and can not harm the patient. Oxymetry is helpful and, when such studies are available, they

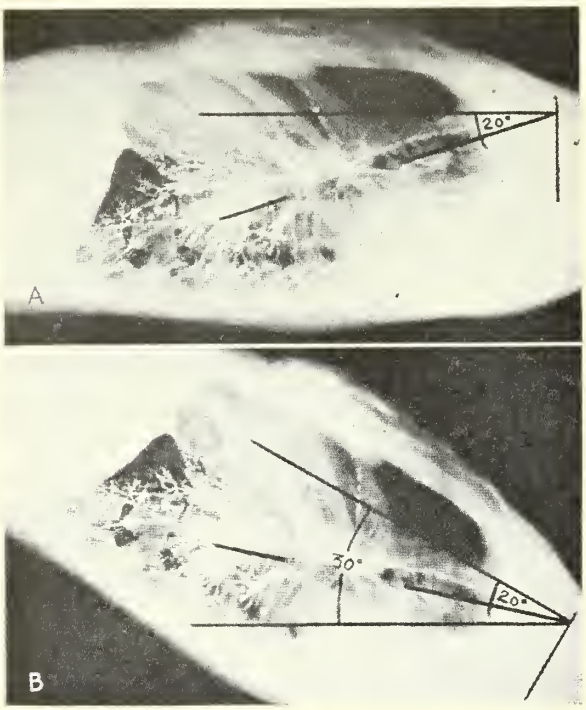


Fig. 1. A. Illustrates the angle of incline which the lower airway bears to the body axis. B. Illustrates the angle which the body axis should bear to the horizontal plane for postural drainage of the lower airway. Galloway has stated subsequently that raising the patient to an angle of 30 degrees in most instances is not practicable, especially when the patient is in a respirator. He states that 25 degrees is usually the greatest angle attainable.[22] This figure originally appeared in the Journal of the American Medical Association[20] and is used through the courtesy of Dr. T. C. Galloway. Permission of the publishers has been secured.

should be used as a guide to evaluating the adequacy of therapy.

In cases due to atelectasis, pneumonia or pulmonary edema, helium mixed with oxygen will assure a more efficient diffusion across the alveolar obstruction. The use of oxygen in conjunction with a tracheotomy presents a special problem and will be discussed later.

Postural Drainage and Suction.—Secretions pooled in the pharynx can in many cases be handled satisfactorily by placing the patient in the Trendelenburg position, causing the material to flow away from the glottis. Frequent and careful suction of the pharynx then should be performed. When possible, it is often helpful to turn the patient, face down, periodically.

Postural drainage, alone, usually is not sufficient for removal of secretions in the trachea, but it has its place as a part of the management. Galloway and Seifert have illustrated effectively (figure 1.) that the trachea inclines posteriorly in the chest at an angle of about 20 degrees. It is necessary therefore to elevate the foot of the bed or respirator so that the body axis is at an angle of greater than 20 degrees. While 30 degrees is more ideal for purposes of such drainage, in actual practice 25 degrees is usually about as much as can be attained, either because the patient cannot tolerate the greater angle or, in respirator cases, the foot of the machine cannot be raised any higher.[20,23]

Tracheotomy.—During recent years the use of tracheotomy, as a means of assuring a patent airway, has been given much attention.[12,20,21,22,23] Sufficient evidence has now been collected which should remove all doubt that early tracheotomy is a good practice. Measures such as postural drainage and suction together with oxygen administration, as outlined, may be given a brief trial and may suffice in cases in which the evidence for hypoxia is still mild. However, if almost immediate improvement is not seen or if the process progresses, then the patient becomes a candidate for tracheotomy with no further delay. During the summer of 1949, in the group of 35 cases of bulbar and bulbo-spinal poliomyelitis at St. Louis City Hospital, twenty-one tracheotomies were performed. Experiences like those of Baker and Priest, West and Bower and Galloway and Seifert led us to conclude that watchful waiting is dangerous and serves only to make the patient's prognosis less favorable.

Except for cases with only mild hypoxic symptoms which were controlled by oxygen, tracheotomy was performed on all patients who presented such evidence of progressive hypoxia as pronounced restlessness and irritability, rapid pulse rate, elevated blood pressure, delirium, marked mental depression, coma or convulsions. Further, with but few exceptions tracheotomy was performed on all cases about to be placed in a respirator. The institution of artificial respiration is a simple procedure for both the patient and the doctor when a patent airway is assured beforehand. Performing a tracheotomy on the patient already in the respirator is a traumatic and almost impossible task. This policy can be modified somewhat when a portable respirator is available. In this case a trial may be given artificial respiration alone and should a tracheotomy prove necessary it can be done with relative ease in that type of respirator.

Bulbar poliomyelitis can at times develop and progress with great rapidity. When, after admission to the hospital, such rapid progress is observed to be taking place, tracheotomy may be lifesaving and should be done without delay. In some instances after tracheotomy the clinical appearance improved almost immediately and many of the so called bulbar signs and signs of polioencephalitis disappear, lending good clinical confirmation to the theory that anoxia and increased blood carbon dioxide concentration in

some cases of bulbar poliomyelitis play a greater role than the virus itself.

In our group, on several occasions, when we thought the tracheotomy was being performed electively prior to institution of artificial respiration, we found the trachea and larynx almost completely filled with large amounts of secretions which had not even been suspected from inspection of the pharynx and auscultation of the chest.

It is readily admitted that some of the patients on whom tracheotomies are performed might have recovered just as successfully without the operation. But we were unable to find a way to tell in advance which cases would be able to get by without the tracheotomy. We were unable to find a single instance in which we felt a patient was harmed or whose outcome was less favorable as a result of the procedure. None of the complications commonly ascribed to tracheotomy such as subcutaneous emphysema or pneumothorax were observed. Nor did we find at autopsy of fatal cases any evidence of mediastinitis. Galloway and Seifert report similar lack of complications from the procedure.[20]

Patients learn quickly to talk with the tube in place. There were no serious complaints from adults or older children and the younger children were never noticeably uncomfortable as a result of the tube.

Convalescent patients who are recovering their swallowing mechanism can be given trials with liquids and food much earlier, since both the patient and the doctor know that if aspiration does occur it can be dealt with readily.

The care of the patient after tracheotomy is important and exacting. Frequent and careful gentle suction of the trachea is necessary. The patient should be placed in the high Trendelenburg position, periodically, to help secretions in the lower bronchi to drain into the trachea.

The practice of directing an oxygen catheter directly into the tracheotomy tube should be avoided. Oxygen has a marked drying effect on the tracheal mucosa and the secretions of the tracheo-bronchial tree. Hard mucous plugs form and can cause dangerous and even fatal atelectasis. The amount of humidification accomplished by bubbling the gas through a jar of water as it is done in the ordinary oxygen delivering apparatus is insufficient. Kubicek, Holt, Elam, Brown and Gullickson have devised equipment which delivers adequately humidified oxygen to the tracheotomy orifice through a closed system and positive pressure can be used when necessary.[24] An apparatus which provides a mixture of oxygen and water in the form of "cold steam" was devised by the City Hospital staff and served the purpose quite satisfactorily (fig. 2).

Table one outlines the indications for tracheotomy as summarized by Galloway and Seifert.

Artificial Respiration.—The respirator is used primarily in cases of paralysis of the diaphragm and intercostal muscles. There is no dispute that the respirator in these cases is absolutely necessary as a life saving measure. Something needs to be said, however, about when such a patient should be placed in the repirator. Under close observation, weakness of the respiratory movements can be seen developing gradually, at least over a period of several hours. Sudden development



Fig. 2. Tracheotomy Oxygen Mask. The plastic dome rests on the anterior surface of the neck over the tracheotomy tube and is secured by means of a tape tied around the patient's neck. The nebulizer shown fitted into the side of the dome has subsequently been modified so that it is separate from the dome and is connected to it by means of a length of flexible plastic tubing. Two vents on the top of the mask permit escape of CO_2. Two ducts at the base, opposite the nebulizer, permit drainage of water which may condense on the plastic surface.

of respiratory paralysis is unusual in our experience. When definite progression of weakness of respiratory movement is noted, long before the patient has to call on his accessory muscles of respiration, the patient should be placed in the respirator without delay. The process is progressive. Almost invariably weakened respiratory excursion will proceed to the point at which artificial respiration is mandatory. Waiting until that time serves only to exhaust the patient and to make the induction of artificial respiration a more difficult task. Earlier use of the respirator affords the opportunity to prepare the patient and permits the procedure to be carried out smoothly and without rush and confusion which can be frightening and harmful to the patient. The use of the respirator in cases of the bulbar type is a more controversial issue with positive opinions pro and con from experienced workers. The opposition to the use of the respirator in this type of patient is based largely on the incidence of aspiration with resultant atelectasis and pneumonitis, and also on the high incidence of pulmonary edema.[25,26]

Galloway and Seifert take the exact opposite stand and state that they have found in this type of involvement almost the greatest usefulness of the respirator; provided, of course, there is an adequate airway and the trachea is kept free of

secretions by postural drainage and suction. They state that the element of fatigue in the patient with bulbar involvement is just as great as in the patient with cervical spinal type and paralysis of the diaphragm and that providing artificial respiration for them greatly improves the prognosis and certainly offers rest to the patient. These patients usually do not need the respirator for as long a time as those with diaphragmatic paralysis and may not need it continuously. For them it is not an absolutely necessary life saving measure but certainly it is a valuable adjunct to treatment.

Table 1. *Summary of Indications for Tracheotomy*[20]

1. Progressive anoxia with secretions in the upper airway.
2. Unconsciousness or pronounced restlessness in a patient who does not respond to other treatment in a few minutes.
3. Pronounced restlessness or stupor in a patient in a respirator, even if paralysis is apparently of a spinal type.
4. Fluid accummulation not otherwise certainly taken care of in a patient who requires a respirator.
5. Bilateral paralysis or spasm of the vocal chords.
6. Rapidly progressive bulbar symptoms.
7. Grave signs of vasomotor failure.
8. Untrained or inefficient attendants, inadequate equipment or poor cooperation of the patient with doubt that the airway will be kept constantly free.

There are several types of respirators. At the present time, one still depends largely on the tank type iron lung. Nursing care of the patient in this machine is difficult but, nevertheless, I believe, it remains the mainstay of artificial respiration. The portable, chest type, respirators are relatively new and still need careful and cautious evaluation. Our own experience with this type of respirator is limited to the Monahagn type. This respirator consists essentially of a plastic shell which fits over the patient's anterior and lateral chest and abdomen, connected by means of a flexible hose to the mechanical apparatus at the bedside. We used this respirator alone on several patients, successfully, and also used it during convalescence on patients who were originally in an iron lung. The ease of nursing and manipulation of the patient in this respirator compared to the difficulties in the iron lung is its greatest advantage. Several cases which were admitted in acute distress, requiring artificial respiration immediately, were placed in the portable respirator and the tracheotomy was done with relative ease. Children were more successfully managed in the portable respirator than were adults. It was found that obese patients and females with large breasts were particularly unsuited for the portable respirator.

It is not uncommon for the patient to experience nausea and sometimes vomiting shortly after they are placed in the respirator. Gastric atony and ileus are a part of the syndrome of poliomyelitis [23,27] and it would seem that the steady and increased movement of the abdomen caused by the respirator aggravates the condition. If gastric suction is employed by means of the Wangensteen apparatus a large amount of gastric content usually can be withdrawn and the patient's symptoms are controlled. Unless the patient's symptoms warrant it, gastric suction probably ought not to be used continuously for a long period of time because of the disturbance of fluid and electrolyte balance which may result.

Psychologic considerations.—Poliomyelitis is a disease which, by reason of the publicity it receives, is attended by much unwarranted hysteria. It is the duty of the physician and all others who have a part in the care of these patients to use every means at hand to dispell mistaken impressions and unnecessary fear. This applies not only in the physician's relation to the patient but also to the patient's family and to the community as a whole. The National Foundation for Infantile Paralysis makes available to hospitals and doctors numerous pamphlets and other literature for distribution to the laity which explain many aspects of the disease. These are helpful and should be used to the fullest extent.

The poliomyelitis ward should be just as quiet and efficiently managed as any other hospital ward, if not more so. There is no place for confusion or lack of poise at any time no matter how trying or burdensome the circumstances. This is especially true at the time of admission and immediately thereafter when the patient and his parents are most in need of assurance. When it is possible, the admission examining room should be located in a place remote from the rooms of respirator patients. Similarly, if at all possible, respirators not in use should not be left standing in corridors for newly admitted patients and their parents to see as they walk on to the ward for the first time.

Time must always be taken, preferably by the doctor, to sit down with the parents and explain to them how sick their child is and what may be expected. This discussion should be done with consideration and sympathy but at the same time truthfully and frankly. The possibilities of extension and complications should be revealed. We found it best to request tactfully an operative permit at the time of admission, making it appear almost routine that such a permit is requested for all patients. This policy proved less alarming than an urgent telephone call later, possibly in the middle of the night, requesting parents to come immediately to the hospital to sign a permit for a tracheotomy. Time should be taken, too, to talk with the patients who are old enough to understand. Mention was made previously about preparing the patients for the respirator. This preparation should include an explanation to the patient of what the respirator is, how it is going to help him breathe and what he can do to get the most benefit from it by cooperating and breathing with the machine. The same applies to preparation for oxygen therapy and for tracheotomy. If such measures as tracheotomy and artificial respiration are used early, there will always be time for such preparation and the patient will be receptive. Waiting until the last minute makes it

impossible to explain to a patient who is laboring for every breath or is cyanotic or delirious from prolonged untreated anoxia.

A newly admitted patient and the patient in a respirator or with a tracheotomy must never be left alone. To do so is not only hazardous so far as the patient's physical well being and even life is concerned but is also psychologically traumatic.

SUMMARY

1. The staff of the poliomyelitis ward should be well organized and integrated with the general hospital staff.

2. Isolation technic should be practiced and quarantine maintained for at least ten days.

3. The need for careful and constant observation of the patient has been emphasized.

4. The general care of the patient, the management of pain and spasm, of urinary retention and of paralysis are discussed.

5. The importance of recognition and vigorous, specific management of early anoxia has been stressed, with particular attention to oxygen therapy, postural drainage, tracheotomy and artificial respiration.

6. Assurance to the patient and his family and other psychologic aspects are particularly noted.

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PRESCRIPTION OF PHYSICAL THERAPY IN POLIOMYELITIS

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THERE ARE three main requirements for intelligent physical treatment in poliomyelitis: (1) an understanding of the pathologic process and of the physiologic effects of physical agents, (2) competent technical personnel* and (3) adequate equipment, which may be modest and frequently improvised.

With goals clearly in mind one must prescribe clearly and concisely what one wants done.

ACUTE STAGE

As long as there is any fever or evidence of increasing weakness, one must enforce almost complete bed rest. During this period the physical therapist carries out passive motions of the trunk and all extremities through a complete range of motion. Using care to prevent sagging or undue tension on tender parts, she does each movement at least ten times and preferably repeats each visit twice daily. The most important motions are trunk flexion, knee flexion, hip flexion with the knee extended, plantar flexion, hip internal rotation and shoulder abduction and rotation.

Table I. *Acute Stage—Invasion to two or three weeks*

Symptom	Pathologic Process	Goal of Treatment	Means Available
a. Permanent paralysis	Irreversible neuronitis[1]	None effective	None available
b. Temporary paralysis	Reversible neuronitis[2]	Prevention of avoidable further invasion and permanent paralysis	Complete bed rest, respirators or accessory oxygen when indicated
c. Muscle pain and tenderness	Not understood; probably not specific for poliomyelitis[3]	Relief of symptoms or prevention of their onset	Positioning; avoidance of unvarying postures; gentle stretching; autonomic blockade; hot packs
d. Muscle shortening reaction	Not understood; probably not reflex spasm;[3,4] possibly vasospasm	Prevention of contractures	As above plus passive exercise and hydrotherapy

Some deformities result from neglect and ig-

*The best safeguard of professional competence in the physical therapist is registration by the American Registry of Physical Therapists sponsored by the American Medical Association.

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norance, but certain types cannot be prevented by the most faithful treatment. These include calcaneal foot in total gastroc-soleus paralysis, adductor contracture of the shoulder and flexor abduction contracture of the hip. Gravity effects are the most easily preventable. Marked imbalance of agonist-antagonist muscles constitutes the least preventable deforming factor.

The physical therapy prescription is relatively simple in the acute stage. Example (hypothetical patient) of therapy follows, each procedure done six times a week:

1. Exercise, passive: carefully supported motions of all extremities through complete range. Gentle stretching of all tight structures to reasonable degree of pain.

2. Later add muscle reeducation for right triceps, shoulder abductors and external rotators. Avoid shoulder shrugging. Convalescent bed exercises (active motions) of all other muscles, ten repetitions, three times daily.

INTERMEDIATE STAGE

The acute stage can be considered ended when the patient is out of isolation. There then is no

Table 2. *Intermediate Stage—To two or three months*

Symptom	Pathologic Process	Goal of Treatment	Means Available
a. Permanent paralysis	See Table 1		
c. Muscle pain and tenderness	See Table 1		
d. Muscle shortening reaction	See Table 1		
e. Residual weakness	Confinement to bed[5] including psychologic invalidism; alienation, (spinal inhibition)[6]	Early relief and prevention of unnecessary invalidism	Muscle examination to determine: 1. Early active exercise 2. Muscle reeducation 3. Avoidance of substitutions
f. Residual weakness	Partial denervation of a muscle	Axon splitting to supply neighboring muscle fibers[7]	Not definitely known to occur in human species; no known means to facilitate it; neurotripsy ineffective & harmful[8]
g. Residual weakness; faulty gait habits	Partial denervation of a muscle	Hypertrophy of individual muscle fibers[9]	Intermittent progressive resistence exercise[10] (overload principle); wheelchair activities if necessary; gait training
h. Persistent muscle imbalance	Asymmetric denervation of agonist group: gravity effects	Correction and prevention	Mechanical supports; corsets, braces

danger of further invasion, although the patient may still be in a precarious state because of respiratory or visceral involvement.

Again the objectives are to get rid of residual muscle shortening reactions and discomfort, to continue muscle reeducation and to begin resistence exercise in order to restore strength. Walking can be permitted if body strength permits and deforming stresses can be avoided. Residual tightening can be treated by whirlpool or Hubbard tank treatments followed by fractional stretching. Incoordination and substitutions are vigorously combatted. Some of the early recovery represents reversible neuron sickness with transient paralysis.[2] Much of the rapid recovery noted in the early convalescent period undoubtedly represents the increase in strength which would follow recumbency with any acute febrile disorder of comparable severity.

Another fraction of recovery probably represents the Van Harreveld phenomenon (reinnervation of muscle fibers by split axons from neighboring uninjured units).[7] This process has not been proved to occur in human beings following poliomyelitis but is known to occur in monkeys after partial anterior root section.[8]

One often uses an interrupted schedule in the intermediate phase, building the basic treatment around progressive resistance exercises. As is true of many other diseases, increasing complexity of procedures and equipment may result in care of selected patients in this phase at special centers, whereas early treatment often can be properly done in the small hospital and by the average practitioner, internist or pediatrician.

There are several reasons for interrupting treatment. Children get "burned out" on continuous treatment and often give only token cooperation. There are bad psychologic effects from continuous treatment which are often worse than the physical defects it is designed to prevent or correct. And, finally, the gradient of improvement on progressive resistance exercise is no faster than occurs in interrupted schedules.[10a] The cost of treatment is a significant factor. It is an imperative in medicine to reduce every possible cost as long as there is no important compromise with quality of treatment. Poliomyelitis can be an extremely expensive disease.

Sample prescription (hypothetical patient), follows, to be done five times weekly until patient plateaus. Determine 10 resistance maxima and 10 assistance minima weekly.

(1). Muscle examination.

(2). Progressive resistance exercise.

(a). Resistive: Right quadriceps plus "leg press," left shoulder abductors, left elbow flexors.

(b). Assistive: Right hip abductors, sacrospinalis, abdominals.

LATE PHASE

One should give progressive resistance excerises from four to six times weekly until no further gains are noted. The 10 resistance maxima or assistance minima give a quantitative measure of improvement in each muscle or muscle group. At the conclusion of such a bout of exercise one usually gives the patient a three to four months' vacation but make such checks as are necessary

on scoliosis, foot mechanics, brace fits and such. Whenever possible one should use home treatment for progressive resistance exercise, checking on the level of achievement at weekly visits. In this way one uses plant and personnel for a much larger treatment volume and is enabled to treat patients who live 100 or 200 miles away. The patient who is not exercising quickly betrays himself.

Progressive resistance exercise is invaluable in helping the patient to gain realistic insight into his limitations and the permanence of disability. When two or three bouts of exercise fail to budge the functional level of a muscle, the patient is convinced.

Incoordinate and jerky movement may be partially explained on the following hypothesis: An individual anterior horn cell—as a result of the Van Harrefeld phenomenon—may ultimately innervate 300 or 400 muscle cells instead of the customary 150. All these fibers firing at once would tend to give a jerky series of gross contractions instead of a smoothly fused tetanus. If this explanation is correct, muscle reeducation and training could not be expected to improve this symptom materially. And it is in fact well known that poliomyelitis intention tremors and incoordination are extremely resistant to treatment.

Table 3. *Late Phase—Up to 12th Month (Rarely, 18th)*

Symptom	Pathologic Process	Goal of Treatment	Means Available
a. Permanent paralysis	See Table 1		
g. Residual weakness; faulty gait habits	See Table 2		
h. Persistent muscle imbalance	See Table 2		
i. Incordination, tremor	Not understood; ? faulty habits ? synchrony[11]	Prevention and cure or amelioration	(Not entirely curable), muscle reeducation; occupational therapy for manual activities
j. Lack of endurance	Partial denervation loss of training	Increased endurance (increase capillary blood supply)[12]	Progressive duration exercises (low resistance — high repetition): occupational therapy

Sample prescription (hypothetical patient) follows, to be done daily for three weeks then review with doctor. Check 10 assistance minima or 10 resistance maxima weekly.

(1) Muscle reeducation to peroneal transplant, to right mid-tarsus. Try to suppress substitution by toe extensors. As an aid use tetanizing (faradic type) current to peroneal motor point at head of fibula.

(2) Progressive resistance exercise to:
  (a) Right ankle dorsiflexors (transplanted)
  (b) Back (sacrospinalis) and abdominals

(3) Bicycling, six pounds resistance. Begin with five minutes and add two minutes daily.

POST CONVALESCENT PHASE

There is rarely any excuse for intensive physical therapy after the twelfth month unless early treatment has been utterly neglected. Although orthopedic procedures sometimes may be wisely done as early as one year after onset, the post-convalescent phase, which lasts the rest of the patient's life, is the phase of surgical correction.

Table 4. *Post Convalescent Phase—Beyond 18 Months*

Symptom	Pathologic Process	Goal of Treatment	Means Available
a. Permanent paralysis	See Table 1		
h. Persistent muscle imbalance	See Table 2		
k. Residual weakness	Partial denervation	Secure best compromise of function possible	Periodic care: permit useful substitution; retrain muscle transplants; recheck back curves; retrain gaits or wheelchair technics, especially after joint stabilizations; check braces, leg lengths, shoes, crutches.
l. Economic disability	Physical disability	Self-sufficiency, or as near to it as possible	Secure help of vocational rehabilitation agencies such as NFIP, State Rehab., Easter Seal Agencies, etc., family resources
m. Psychologic crippling	Improper adjustment to physical disability	Proper adjustment	Realistic and honest interpretation from start; counselling of family not to infantilize

One may sometimes give intensive treatment for brief periods and clearly-defined objectives. These include reeducation of tendon transplants or final instruction in crutch gaits, wheel chair transfers and other self care activities. Whereas substitute motions in early disease must be sternly combatted, one may permit useful ones in the final evaluation. Here one is certain which functions are permanently lost.

PROGNOSIS IN POLIOMYELITIS

In my experience muscles which are notoriously poor to recover include the opponens pollicis and other small muscles of the hands and feet; the abdominals, especially the transversalis; the abductors and external rotators of the shoulders, and the serratus anterior.

Muscles showing a decidedly favorable tendency to recover (with many exceptions) include those innervated by the cranial nerves; the neck muscles and trapezius; the elbow flexors; the intercostals; the knee extensors, and the plantar flexors. Other muscles are in an intermediate position.

One can get a good idea of prognosis in a given muscle at the sixth month by noting its functional level on the manual muscle test, the amount of scaphoid atrophy (hollowing, not just flattening),

and by its response to diagnostic electric currents and electromyography.

In paraplegic poliomyelitis much depends on the age of the patient and the amount of involvement of the shoulder depressors and hands. Stair climbing with braces and crutches usually will not prove practical if the hip elevators are missing (quadratus lumborum, lateral abdominals, latissimus, lumbar sacrospinales and opposite gluteus medius). When independent stair climbing is impossible, the patient will rarely continue using braces and crutches. Then one must settle for the best possible wheel chair adjustment. These decisions should be much more liberal in children than in adults. An adequate discussion of choice of bracing, crutches and wheel chair types would expand this article to unwieldy lengths.

The quadriplegic poliomyelitis patient often requires little treatment. Sometimes these unfortunates are literally unable to do anything but aliment, talk and raise their heads. Any slight residual function must be developed maximally both for morale purposes and to reduce the burden of care on others. Plastic splints and modified spoons, combs, toothbrushes and such can sometimes be improvised for these purposes.

ABUSE OF PHYSICAL THERAPY IN POLIOMYELITIS

The worst abuses consist of useless treatment and overtreatment. Failure to treat at all is not nearly as bad. There are many people walking around with mild poliomyelitis residuals who never had the benefit of a single hot pack or even a correct initial diagnosis. Some of them now need no treatment or at most an orthopedic procedure. Others could benefit from gait training or crutches. Old habits are extremely hard to break, but success is a powerful motivating force.

The commonest abuse is failure to define goals and prescribe precisely. Failure to outline prognosis realistically at the beginning may start the patient on a long and expensive trek for a magic cure. The lengths to which wishful thinking and self deception can lead some patients or their families are truly fantastic. The psychologic damage to small children from over hospitalization and unnecessary separation from the family is incalculable. The lavish waste of public funds on useless treatment is regrettable on many scores, not the least of which is the unfortunate philosophy conferred on the patient. He may come to think of the world as owing him a living and that he deserves some special commendation for having had the bravery to contract poliomyelitis.

The idea should be quickly debunked that a mystic aura surrounds poliomyelitis, that it is untreatable except by the elect, and that it must always be necessarily so expensive.

SUMMARY

In this article I have briefly reviewed the four chronologic phases of poliomyelitis with respect to physical treatment.

I have stressed knowledge of pathologic anatomy and physiology, and realistic treatment goals.

As examples I have supplied prescription of a hypothetical case in each phase.

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TELLS NEW METHOD OF TREATING WEAK MUSCLES

How progressive resistance exercises may be used successfully in the treatment of weakened muscles resulting from disease or injury was described in the February 9 *Journal of the American Medical Association.*

These exercises, designed to develop strength and power in the muscles rapidly and effectively, consist of exercising the muscles against progressively increasing resistance, usually with the aid of weights. The article was written by Dr. Arthur L. Watkins, assistant clinical professor of medicine, Harvard Medical School, and chief of physical medicine, Massachusetts General Hospital, Boston.

Dr. Watkins explained that the maximum resistance to movement by the affected part of the body is determined. Then the patient is put through an exercise which starts with a 50 per cent resistance which later is stepped up to 100 per cent.

Each week a new maximum resistance test is given, with the exercises continuing daily until full development of the muscle is secured. However, it is important to have rest periods of one or two days each week, Dr. Watkins said.

FACTORS INFLUENCING PSYCHOLOGIC REACTIONS TO CRIPPLING DISORDERS

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THE IDEA that a relationship exists between certain characteristics of physique and personality is firmly entrenched in the thought patterns of most people. One could find evidence for such a belief at the level of superstition, literature, or science. Furthermore, the effect of body structure upon personality is generally presumed to be more direct when any unusual physical characteristic is present. Thus one finds prevalent such stereotypes as the notion that obese persons are jolly, short men self-assertive, or hunchbacks malign and evil. If one should challenge such a belief, its proponent might well document his case with histories of two or three individuals who fit the picture exactly.

An illness or accident which produces a definite change in the body structure, or a condition existing from birth which causes anomalous physical development, must invariably have an effect upon personality functioning if any validity can be claimed for these assumptions. However, experimental investigations designed to test this hypothesis have for the most part been inconclusive. Although general trends may sometimes be detected, prediction for an individual case is hazardous. This may be due less to the fact that the physical infirmity and personality functioning are not related than to the many variables which can remain uncontrolled in such an investigation.

It is as untenable to assume that there will be uniformity of reaction to a crippling disorder as it is to predict identical reactions to any stressful situation. No matter how similar the disease or the accident might be for two different individuals, one cannot overlook the fact that two different organisms will be responding, bringing with them all the previously acquired patterns of adjustment which have been developed up to that time.

In reporting on the immediate reactions of children following poliomyelitis, for example, physicians have described a wide variety of behavior patterns. One of those most commonly reported is regressive behavior, or reversion to an earlier level of development. Temper tantrums, emotional liability, and even incontinence are not uncommon on poliomyelitis convalescent wards. The patients are often egocentric and demanding, even when such behavior was unusual for them prior to the illness. Persistent dependency reactions also appear, or, in contrast, marked rebellion and blame of others for the incapacitation. Hypochondriasis and feelings of inadequacy and hopelessness may also emerge.

These are a few of the most commonly reported negative patterns of reaction appearing immediately following the acquisition of a physical handicap. Landis and Bowles[1] have characterized the ultimate adjustment of a group of 100 physically handicapped women as falling within one of the four following categories:

1. Withdrawal reactions, in which the individual avoids situations which might call attention to the handicap and thereby cause embarrassment.

2. Substitutive reactions, in which impossible modes of self-expression are replaced by different responses which accomplish a similar purpose.

3. Obliterative reactions, in which an attempt is made to deny any conscious recognition of the handicap.

4. Compensatory reactions, such as cyclic adjustments, fatalistic attitudes, paranoid reactions, or aggressive and competitive behavior.

This recognition of the diversity of possible reactions serves to demolish stereotypes as to what should be expected from an individual in response to the acquisition of a physical handicap as the reactions may run the gamut from extremely maladjustive to maximally constructive under the circumstances. A review of some of the factors which may influence the reaction within any individual would thus seem warranted.

1. *Age of Patient When Handicap Is Acquired.* —This is a rather controversial variable as the age at which an individual acquires his deficit is postulated by different authorities to have different effects. Medd[2] reflects the following opinion:

"The older a person is at the time he receives his physical handicap the less likely emotional trauma is apt to result. For the child who is not born with a deformity, but receives a severe injury when he is young the trauma is much more severe than that sustained by the person who is crippled later in life; unless he receives both physical and emotional reeducation while he is still young. There is a tremendous sense of loss of power that can never be recovered."

At the other end of the continuum one finds just the opposite impression, i.e., that duration of disability is negatively correlated with adjustment to the defect. Guttmann and Mayer-Gross[3] describe this point of view as follows:

"The young organism is best fitted for the 'technical' or 'mechanical' adaptation to an injury; youth being a state of continuous physical change and functional adaptation, mutilation means a change in direction of development. That is why congenital or early acquired lesions are often so well overcome . . . Similarly, psychological adjustment is easy in childhood, because there is no memory—in the widest sense of the word—of a previous stable state."

Such contradictory opinions do not necessarily cancel one another; on the contrary, they offer a rather positive implication. That is, a factor such as age at the time a handicap is acquired

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may possibly be a rather incidental variable. Perhaps the influence of age is more related to other factors that vary with age than it is to age *per se*. For example, the values held by a child (or an adult) at the time of acquisition of the handicap will likely have considerable importance in determining his attitude toward the disability. For a young child of 4 or 5 years motor activity is extremely important. He is in the process of rapidly acquiring many new skills which involve expressive movements of the entire body, particularly the arms and legs. In his own private reaction to the residual effects of poliomyelitis, the necessary restrictions of motor activity might be the only deprivation he would feel. During adolescence, a time when physical appearance is assuming greater importance, the limitations in motor activity might assume a subordinate role while the cosmetic injury would be regarded as the most traumatic aspect of the illness. In subsequent years, this feeling might disappear from the top of the hierarchy of deficit, with vocational limitation usurping the leading role. The concept of a "cripple" is by no means a unitary one—one is crippled only in terms of specific activities and skills, and this pattern will vary from one individual to another and within the same individual from time to time.

2. *Fantasies of the Child at the Time of the Illness or Injury.*—It is generally well recognized that a child has an active fantasy or imaginative life and that this type of activity is one means whereby he tests out the world about him and gradually forms a concept of reality. Certain fantasy themes appear with striking regularity in many different children. For example, quite young children regard their parents as omnipotent —they are the givers and the deprivers. Physically handicapped children are no different, and they also may share this belief. If their handicap occurs at a time when this omnipotence is attributed to the parents, they are likely to consider the parents to blame for it. Such a feeling would obviously precipitate strong feelings of hostility toward the parents who have ostensibly punished them in this way. Their hostility is likely to give rise to many aggressive and antisocial acts, which in turn are almost certain to meet with disapproval or punishment on the part of the parents. Thus a rather vicious circle is set up: the child fantasies that he is being punished by the imposition of his physical disability; he retaliates by being bad and unpleasant; because he has been bad the disability can seem justified. Another possible type of reaction to the same situation, however, is to repress these hostile impulses and thus lay the foundation for anxiety and feelings of guilt.

Loss or deformity of a limb may have other possible meanings in the child's fantasy. It may be the realization of a long-awaited punishment for some unacceptable act. Evidence for this is found in the study by Beverly[4] who reports that 90 per cent of cardiac and diabetic children interviewed in a large hospital responded to the question, "Why do children get sick?" with answers having the general meaning, "Because they are bad." On the other hand, the same injury may confirm a lifelong dread of the vulnerability of the body and give rise to anxiety or depression.

In order to understand how it is possible for such attitudes to develop, one need only reflect momentarily upon the attitudes held by many adults. In the ancient Hebraic tradition, physical defect identified one possessed by an evil spirit, representing punishment for sins of the individual or his family. The subjective attitudes of certain groups today do not differ significantly from this tradition.

3. *Possible Neurologic Involvement.*—This variable is manifestly important in many conditions resulting in physical handicaps, such as cerebral palsy. According to some investigators, it is more important in poliomyelitis than is generally assumed. Meyer,[5] who studied fifty-two children with poliomyelitis for three years by means of regular interviews and psychologic tests, reported that many patients showed psychologic symptoms suggesting cerebral involvement. Crothers and Meyer[6] found in about 20 per cent of the poliomyelitis cases in their series widespread central nervous system involvement similar to that seen in other types of virus encephalitis. Difficulties in learning, inability to sustain effort, short attention spans and irritability were frequently observed. This evidence suggests that some of the maladaptive behavior observed after the illness may in a certain percentage of cases be due to an organic deficit rather than entirely due to the psychic trauma invariably accompanying the disease.

4. *Attitudes of the Parents.*—The weight of this variable is so great and so generally recognized by those who work with handicapped children as to make inclusion of it seem almost pedantic. Bender[7] considers that a child will be able to tolerate a disfiguring anomaly to the extent that his mother is able to accept it. Parental rejection is a frequent cause of unfavorable attitudes in the crippled child. This rejection may be conscious and overt, giving the child no opportunity to feel that his handicap does not affect his life adjustment, or it may be subtle and devious. In the latter instance it may assume protean forms, often appearing in the guise of overprotection.

Where these parental attitudes prevail, undesirable behavior on the part of the child may represent an attempt to regain a privileged position or to obtain emotional acceptance from the parent. The propensity of a parent of a disabled child to act in these extreme ways may arise from several factors. At the superficial level are the genuine sympathy aroused by the child's condition and resentment at the trouble and extra

expense incurred. At a deeper level one finds roots of the attitudes in the parents' own irrational feelings about the meaning of the handicap, e.g., shame at the social stigma attached to them as parents of a defective child. These feelings are frequently present simultaneously, giving rise to inconsistent behavior on the part of parents. This is not to hurl epithets of blame on the parents, for these feelings are often realistically oriented. Nevertheless, there is little question but that the treatment which crippled children often receive provides a fertile field in which maladjustments may flourish.

5. *Gratifications Implicit in Physical Disorders.*—That certain narcissistic satisfactions are experienced by disabled persons cannot be overlooked. Defect and suffering give the handicapped person a claim to approval, attention, or even to admiration. By virtue of an unusual physique one may be a person of some importance. Extreme magnification of this attitude is seen in individuals who capitalize on their defects by setting themselves up as side show features. In milder manifestations one sees this attitude in the child who does not want to go home from the hospital after an illness because of extra attention, better living conditions or a variety of gratifying circumstances.

Although the channeling of sympathy and attention upon the injured person is justifiable, it is also necessary to consider the unfavorable effects of this upon the patient and other family members as well. Case studies have been reported in which the siblings of a physically disabled child show more inadequate personality adjustments than the handicapped child because of jealousy over the special attention he receives. It may be, however, that this situation warrants closer scrutiny. For while it is true that a handicapped child may often have the position of supreme eminence in the family and be thereby an object of envy, he may also incur animosity from his siblings and be profoundly affected by their reaction to him. For example, a case recently came to the attention of the writer of a 10 year old diabetic boy from a rather low socio-economic status whose diet cost two thirds of the total amount allotted for food in a family of seven. For a time he ate the special diet regularly and was adapting himself adequately to the diabetic regimen. Soon, however, he refused to eat properly and was not controlling his carbohydrate intake. Investigation by a social worker disclosed that the other children in the family and even the parents of the patient were openly resentful of the special favors he received. This aspect of the situation was ameliorated somewhat when another child in the family became diabetic, giving the first child at least one ally in an otherwise alien camp.

Thus it can be seen that while there may be gratification of either physical or emotional needs as the result of a physical handicap, these will generally be counterbalanced by deprivations on another account. Animosity and jealousy from other family members may sometimes lead to ostracism and ridicule, which, in turn, will further affect the personality of the handicapped child.

6. *Relationship Between Severity of Disability and Adjustment.*—There have been many attempts to determine if such a relationship does exist. Landis and Bolles[1] reported a relation between severity of disability and poor social adjustment. Lowman,[8] on the other hand, found that neither physical normality nor degree of deformity is too important in determining personality, social or vocational adjustment. These divergent findings suggest the possibility that this variable is also a multifaceted rather than a unitary one. That is, severity of deficit is intricately tied up with the amount of environmental deprivation the child will experience, the individual's own perception of his body image, achievement goals held by the handicapped person.

Barker, Wright, and Gonick[9] have developed a concept which has direct bearing on this issue. They present a comprehensive personality portrait of two girls of college age with residual paralysis resulting from poliomyelitis in whom adjustment is inversely related to severity of disablement. The girl whose handicap was extreme appeared happy and content; the one whose disablement was only moderate showed a poor adjustment characterized by unhappiness, suspiciousness and antagonism. These authors present the hypothesis that the value to the handicapped person of "normality" and the degree of egocentricity of his life situation may be extremely important in determining his pattern of reaction. They assume that physically disabled persons constitute an underprivileged minority and as such are in a position where many goals are inaccessible. However, disablement is not an all-or-none affair, and it is possible in some respects for an individual to pass from one group to the other. Thus for an individual with only a slight or moderate handicap a greater range of "normal" activities is possible, placing him in a marginal position. It is known from studies dealing with various racial and social minority groups that marginal persons often have the greatest difficulty in adjusting.

Barker, Wright, and Gonick[9] summarize their point of view on this issue as follows:

"We suggest that when a person is in a marginal position between an underprivileged and a privileged social position, conflict and "maladjustment" will result (which may not be undesirable in all cases). This is a psychological concept to be investigated further for all kinds and degrees of physical disability. If true, it leads to the conclusion that disabilities and experiences that place the individual in marginal situations are in many respects less desirable than those that place an individual in restricted but unambiguous situ-

tions. We gain the idea from these cases, too, that the relative potency of personal and of social goals can be a factor of great importance."

If there is any conclusion to be drawn from this review of some of the pertinent variables influencing an individual's reaction to a physical handicap, it might be that uniformity of reaction is not to be expected. Implicit in this concept is a plea to avoid generalizations about the type of relationship which is presumed to exist. In order to be effective, guidance efforts should be based upon the unique, idiosyncratic picture presented by each child with his own pattern of attitudes, values and response tendencies. Only through an approach such as this can a truly productive mental hygiene be developed which will facilitate optimal personal growth for each handicapped individual.

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SPECIAL CARE FOR THE PATIENT WITH BULBAR POLIOMYELITIS

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The patient with acute poliomyelitis involving the brain stem is in a precarious condition because he may lose any or all of a number of vital functions which are controlled automatically from this area of the brain. Automatic regulation of respiration is controlled through centers located here. Likewise, blood pressure and circulation are controlled from nuclei located in the medulla. Involvement of the cranial nerve nuclei lying in this area may lead to obstruction of the respiratory airway and cause the death of the patient. Consequently, any patient with bulbar poliomyelitis must be treated as a critically ill patient and provided with constant nursing attention throughout the acute phase of the disease.

The problems which are likely to cause difficulty may be divided into: (1) problems of respiration, (2) problems of circulation, (3) problems of nutrition and hydration and (4) problems associated with deterioration of the body from immobilization.

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PROBLEMS OF RESPIRATION

The respiratory problems of the patient with bulbar poliomyelitis may be divided into four categories:

1. Maintain a free airway.
2. Maintain ventilation.
3. Maintain oxygenation.
4. Prevent pulmonary congestion, edema and pneumonia.

Maintaining a Free Airway.—In acute bulbar poliomyelitis this may be difficult. Obstruction in the pharynx and larynx may occur from a number of causes. With involvement of the ninth, tenth and twelfth cranial nerve nuclei by the poliomyelitis virus, there may be collapse of the upper airway. The tongue may fall back into the pharynx, decreasing the cross sectional area of the airway. Likewise, paralysis of the vocal cords due to involvement of the tenth cranial nerve may cause complete mechanical obstruction. More frequently the cause of obstruction is accumulation of saliva in the lower pharynx due to paresis of the pharyngeal musculature and inability to swallow adequately. Because of this accumulated saliva the patient breathes with short, shallow breaths so that he will not aspirate the saliva into the trachea and cause a paroxysm of coughing. This restricted ventilation results in an inadequate oxygen supply. Attempts at feeding the patient or administering water during the acute phase of poliomyelitis when there is paresis or paralysis of the pharyngeal muscles likewise are liable to cause aspiration and choking. Many patients are panic stricken at the idea of attempting to swallow fluids at this early phase of bulbar poliomyelitis. Therefore, nothing should be administered by mouth until the patient's condition has stabilized and he is able to handle his saliva.

All patients with any evidence of bulbar involvement should be put into the prone Trendelenburg position to allow postural drainage of saliva and mucus from the mouth. They should be encouraged to spit out fluid which they cannot handle. Nothing should be given by mouth during the acute stage of the disease. Many patients need the further assistance of mechanical suctioning of fluid accumulated in the posterior pharynx in addition to postural drainage. Since the airway must be open constantly, this phase of care may require special nursing to prevent hypoxia or death of the patient from obstruction.

In the case of the bulbar-respiratory poliomyelitis patient who does not have sufficient respiratory muscles for adequate ventilation, the prone Trendelenburg position is impossible. Patients who must be placed in the respirator are limited to a side or supine position and, conse-

quently, cannot allow gravity drainage of saliva from the mouth. These patients, if the airway cannot be maintained by suctioning, require a tracheotomy to provide an accessory airway which can be kept open continuously to maintain oxygenation. Tracheotomy is an elective procedure which is performed at the time when it appears that the patient will be unable to maintain his airway adequately. If it is delayed until the patient has had a severe hypoxic incident, his prognosis becomes grave. He is not likely to survive. On the other hand, tracheotomy should not be done unless there is indication for it. The major indication for performing a tracheotomy is that the airway cannot be maintained adequately in spite of constant nursing attention and repeated suctioning. Under these conditions, since tracheotomy is a relatively simple procedure, provision of an accessory airway which can be maintained and through which oxygen can be given in necesary concentration provides a safeguard which may save the life of the patient.

Maintaining Ventilation.—This may require a respirator if there is insufficient strength in the muscles necessary for ventilation. In pure bulbar poliomyelitis respiratory disturbances are related to obstruction of the airway, and placing such a patient in a respirator without relieving the



Fig. 1. Strato zipper collar used when a tracheotomy is necessary on a patient in a respirator. The funnel shaped collar has a zipper on each side which can be opened when putting the patient into or removing the patient from the respirator. A wire ring depresses the collar into the respirator and holds it below the tracheotomy tube and its connections. (Reprinted from the American Journal of Nursing. Kottke and Kubichek.)

obstruction adds to rather than diminishes his difficulty. Likewise, when it is necessary to place a patient with bulbar involvement in a respirator because of insufficient strength of the muscles of ventilation, the patient becomes more difficult to handle than if he can be maintained out of the respirator. Nevertheless, if the diaphragm and intercostal muscles are not adequate for ventilation, it may be necessary to use some type of respiratory assistance. The large, tank type respirator is the most effective respirator for use with these patients. If they have some ventilatory ability, it may be possible for them to maintain themselves with the small chest type respirator. In either case, if there is obstruction of the airway due to an accumulation of saliva in the lower pharynx, the respirator will cause aspiration of this material into the lung with resulting atelecta-



Fig. 1A.

sis and pulmonary edema. The necessity for using a respirator for a patient with severe bulbar poliomyelitis and respiratory weakness makes a tracheotomy necessary frequently in order to maintain a free airway at all times.

If a tracheotomy is to be performed on a patient to be placed in a respirator, the respirator collar must provide adequate space so that the tracheotomy tube and its attachments may be above the level of the collar. It has been found for this purpose that the funnel shaped collar with a zipper on each side is the easiest type of collar to use (fig. 1). The older type of sponge rubber collar is too heavy and fits too high on the neck to allow room for the tracheotomy. A strip of chamois skin placed around the neck under the collar prevents friction of the collar on the neck and the resulting chafing and discomfort which may occur.

The primary muscles of respiration are the intercostal muscles and the diaphragm. Under normal circumstances these muscles carry on the major part of all respiratory efforts. It is only under conditions of unusual exertion that other muscles are needed for respiration. Accessory muscles of respiration which are substituted frequently under conditions in which the primary muscles of respiration are ineffective are the sternocleidomastoid muscles, the abdominal muscles, the muscles of the pectoral girdle, the strap muscles in the neck and the glottis. The sternocleidomastoid muscles, the pectoralis minor and the strap muscles of the neck function as muscles of inspiration. The abdominal muscles

and the pectoralis major act as muscles of expiration. When a patient has these muscles available, he can learn to substitute them for the primary muscles of respiration.

The muscles of the glottis also may be used to aid in respiration when there is respiratory weakness or fatigue. At the end of inspiration, the glottis may be closed to hold inspired air in the

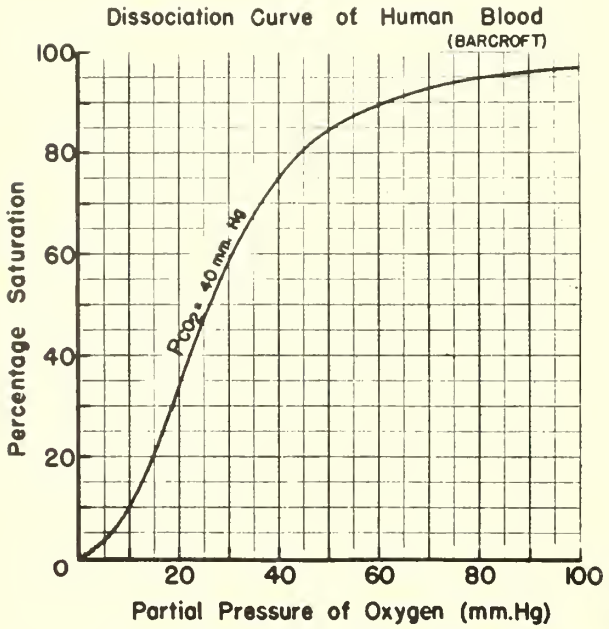


Fig. 2. The dissociation curve of human oxyhemoglobin relates the partial pressure of oxygen in solution in the plasma to the proportion of hemoglobin which is oxygenated. The normal arterial blood has an oxygen tension of 100 mm. Hg. and 98 per cent of the hemoglobin is oxygenated. The flat curve at the far right of the graph indicates that for small decreases in saturation of oxyhemoglobin there will be a marked decrease of the partial pressure of oxygen in the plasma and the rate of diffusion of oxygen from capillary to tissue will be reduced similarly.

lung. When the vocal cords are open, expiration occurs passively. This type of breathing is seen frequently when there is respiratory distress, and is accompanied by the so-called "respiratory grunt." Such breathing always indicates that there is impairment of respiration.

Conditions which increase the rigidity of the thorax reduce the effectiveness of the muscles of ventilation and may result in inadequate respiration. Thoracic rigidity may be increased by spasm of the intercostal muscles, the muscles of the pectoral girdle or the abdominal muscles. Such spasm may be seen in acute poliomyelitis. This muscle spasm limits inspiration mechanically. Moreover, when these muscles are in spasm, respiration causes pain and, consequently, respiration is inhibited reflexly in an attempt to avoid pain. Pulmonary congestion, emphysema and pulmonary fibrosis also increase the rigidity of the thorax and the work that must be done in carrying on respiration.

Maintaining Oxygenation.—Maintaining oxygenation and removing carbon dioxide are the two functions of respiration. Of these oxygenation is the major problem in poliomyelitis. Oxygen is a basic need for all cell metabolism. Since there is no oxygen reservoir for the cells in the brain and spinal cord, it is necessary that oxygen be supplied continuously through an adequate circulation. Depletion of the oxygen supply to the neuron pool, in a short period of time, will cause destruction of the neurons. In poliomyelitis, with its resulting fever and inflammatory edema in the central nervous system, the supply of oxygen is reduced and the demand is increased. Consequently, it frequently is necessary to augment the oxygen supply.

Today there is available the Millikin oximeter clinically to indicate the saturation of blood hemoglobin with oxygen. From the oxygen saturation and the Barcroft curve of oxyhemoglobin dissociation one can calculate the oxygen tension or driving force for diffusion of oxygen (fig. 2). Normally the arterial hemoglobin is 98 per cent saturated and has an oxygen partial pressure or driving force of 100 mm. Hg. When the hemoglobin saturation falls to 90 per cent, the saturation of oxygen has fallen to 60 mm. Hg., or 40 per cent of the driving force to move the oxygen from the capillary to the cell has been lost. When the oxygen saturation of hemoglobin has been reduced to the point at which cyanosis is evident, at about 70 per cent to 80 per cent



Fig. 3. A tracheotomy tube adapted for the continuous administration of humidified oxygen. A cross type adapter is fastened by a spring clip to the inner cannula of the tracheotomy tube. To the horizontal arms of the adapter are attached the inspiratory and expiratory tubes of the humidifier. The vertical arm of the adapter is capped with a rubber cap. This can be removed whenever it is necessary to suction the tracheotomy tube without disassembling the apparatus. (Reprinted from the Archives of Physical Medicine. Kubicek, Holt, Elam, Brown and Gullickson.)

saturation, this oxygen tension is only from 35 to 45 mm. Hg. In other words, from 55 to 65 per cent of the driving force to move the oxygen from the capillary to the cell has been lost. Consequently this patient will have far less oxygen available at the inflamed neuron than would be the case in a normal brain. The lack of an adequate oxygen supply in the presence of inflammation and an increased metabolism may be the factor which causes the death of the neuron. To maintain a constant supply of oxygen to the neuron, it is desirable that the oxygen tension of the arterial blood be maintained at least at

the normal level. This requires that the arterial oxygen saturation be maintained at from 95 to 98 per cent. This is accomplished by supplementing the oxygen of the inspired air at whatever concentration is necessary to obtain this saturation. Supplemental oxygen can be provided by nasal catheter, oxygen mask, oxygen tent or through an attachment to the tracheotomy tube.

Figure 3 indicates a tracheotomy tube adapted for use with an oxygen inhalator. To the sidearms of the cross connector on the tracheotomy tube large tubes supply a continuous flow of oxygen so that the patient can breathe against a minimum of resistance.

Figure 4 indicates the fundamental components of the humidifier system necessary when supplying oxygen by tracheotomy tube to the patient. Since compressed oxygen is completely dry it is necessary to humidify it at a temperature of 90 F. in order not to cause dehydration and irritation in the trachea and inspissation of the

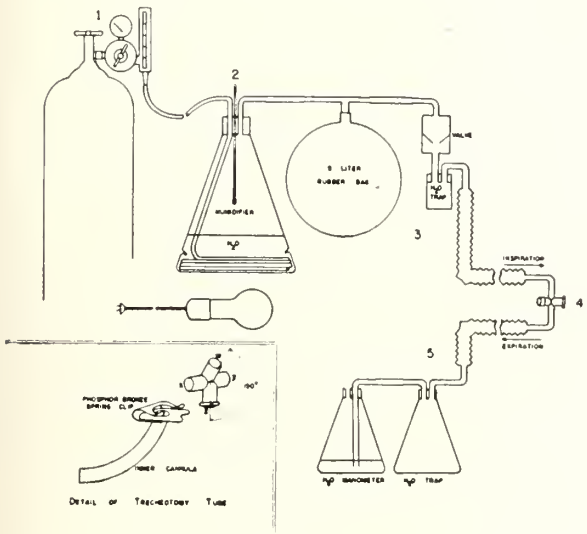


Fig. 4. Diagram of the apparatus used to provide humidified oxygen through the tracheotomy tube. The oxygen should flow through the system at such a rate that the 5 liter rubber bag is three fourths distended. The gas is saturated with water as it bubbles through the water in the humidifier bottle kept at 90 F. by a light bulb beneath it. A one way valve (3) prevents expiration of air into the reservoir bag. The inspiratory and expiratory tubes should have a bore of one inch or more to decrease the resistance to breathing. They should be drained every six hours of the accumulated water of condensation. The cross adapter (4) is attached to the tracheotomy tube. The tube in the water manometer (5) is one centimeter below the surface of the water. The rate and volume of gas bubbled through this manometer is a good index of the patient's respiration. (Reprinted from the Archives of Physical Medicine, Kubicek, Holt, Elam, Brown and Gullickson.)

secretions in the bronchi. For an emergency, the material necessary for such a humidifier system may be improvised from equipment obtainable in any chemistry laboratory and operating room. It must be emphasized that oxygen flows freely through this system only if the tubes are of large bore. If tubing of small diameter is placed in the system at any point, the resistance will go up as the fourth power of the radius of the bore. The increased resistance caused by the addition of a short piece of small tubing may make it impossible for the patient to breathe through the system. Likewise, it is important to avoid obstruction in the tracheotomy tube or any part

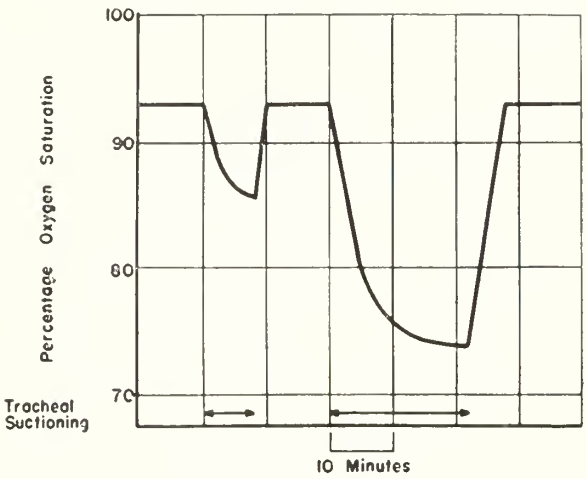


Fig. 5. Oximeter record of the arterial oxygen saturation during prolonged suctioning of a tracheotomy tube. During twenty minutes of continuous suctioning by an over zealous nurse, the oxygen saturation of the arterial blood dropped to less than 75 per cent. This represented an oxygen tension of only 40 mm. Hg. in the plasma and was a severe hypoxic insult to the patient. Periods of suctioning should be brief to avoid this danger and repeated at short intervals if necessary.

of the humidifier airway. As the patient respires, mucus will accumulate in the trachea and may flow into the tracheotomy tube. Saliva also may seep down through the larynx into the trachea and require suctioning at intervals. Such suctioning must be carried on as frequently as necessary to maintain an open airway.

A catheter used to suction secretions acumulated in the tracheotomy tube or trachea may be dangerous if not used properly. During the time that the catheter is in the tracheotomy tube there is obstruction of ventilation and asphyxia develops. Oximeter studies have shown that prolonged suctioning may result in a degree of hypoxia dangerous to the patient's life (fig. 5). Therefore the catheter should be inserted quickly, suctioning continued for only two or three seconds, and then the catheter removed to allow ventilation of the patient. If it is necessary to suction again this may be repeated a number of times with intervals for respiration.

Another advantage of tracheotomy for a patient with respiratory weakness and a low vital capacity is that the dead space of the upper airway is markedly reduced. Consequently the patient can exist on a smaller tidal volume than is necessary if he is breathing through his nose or mouth. Nevertheless, in many cases, he may still require supplementary oxygen to provide an adequate supply for his metabolic demands. Patients who are otherwise properly cared for can breathe humidified oxygen supplied through the

tracheotomy tube for long periods of time without damage. When there is evidence of hypoxia, patients should be given 100 per cent oxygen through the tracheotomy tube. As respiration becomes more adequate this pure oxygen may be diluted with 80 per cent helium and 20 per cent oxygen, or compressed air, to provide the desired concentration of oxygen.

Lower concentrations are obtained by dilution with air according to the following table:

90 per cent oxygen = 5 liters of oxygen plus 1 liter of air.
80 per cent oxygen = 4½ liters of oxygen plus 1½ liters of air.
70 per cent oxygen = 4 liters of oxygen plus 2 liters of air.
60 per cent oxygen = 3 liters of oxygen plus 3 liters of air.
50 per cent oxygen = 2½ liters of oxygen plus 3½ liters of air.

Pure nitrogen or pure helium should never be used to dilute oxygen since, if the oxygen tank runs dry, the patient will die of hypoxia in a matter of a few minutes.

Pulmonary Congestion, Edema and Pneumonia.—These obstruct the passage of gases through the alveolar wall and result in an hypoxia which aggravates the patient's condition. Whenever any patient is immobilized in one position for a matter of hours, congestion occurs in the dependent parts of the lung. This congestion is purely mechanical due to the increased venous pressure built up when blood is forced from the dependent area back into the left atrium. When the patient is turned so that the congested segment of lung is elevated above heart level, the blood drains out and the congestion disappears. When dependency is maintained for a long period of time, not only congestion, but pulmonary edema ensues and the lung becomes heavy, wet and airless. Such pulmonary congestion and edema decrease the surface area of the alveoli for the absorption of oxygen and the removal of carbon dioxide. Likewise, areas of congestion form a focus for infection. Therefore hypostatic congestion is to be avoided as a serious threat to the life of the patient. This can be done best by turning the patient at frequent intervals. Each patient, whether in the respirator or out, who is unable to turn himself, should be turned from back to side and over again at hourly intervals, day and night, to avoid pulmonary congestion and resulting edema. Likewise, aspiration of mucus, food or foreign material will result in blocking of bronchi, with atelectasis and secondary pulmonary edema. This may be avoided by maintaining a clear oropharynx so that no material will be aspirated. When partial obstruction of a bronchus is suspected, bronchoscopy should be done in order to suction out the mucus and prevent an atelectasis from developing. Pneumonia can be controlled by use of intramuscular penicillin given routinely throughout the period that the patient is immobilized. Penicillin also may be administered as an aerosol inspired through the mouth or through the tracheotomy tube in order to come in direct contact with organisms in the alveoli of the lung.

PROBLEMS OF CIRCULATION

In bulbar poliomyelitis, involvement of the circulatory centers of the medulla may result in the loss of circulatory control with a marked fall of blood pressure. The most important medullary circulatory center from the standpoint of survival is the medullary pressor center. This pressor center is made up of a small cluster of cells located bilaterally in the medulla. When these nuclei are destroyed generalized vasodilatation occurs, the blood pressure falls and the patient goes into profound shock. This must be combatted vigorously if the patient is to survive. The Trendelenburg position to maintain cerebral circulation plus the use of epinephrine or another sympathomimetic agent should be used immediately and for the period of time necessary to maintain the blood pressure. Circulatory insufficiency, whatever the cause, decreases circulation through the capillaries. Stagnation of blood in the capillaries results in a decrease in oxygen tension of the plasma and desaturation of hemoglobin. Since diffusion of the oxygen from the capillary to the cell is proportional to the oxygen tension gradient, as this gradient diminishes the transfer of oxygen diminishes. This results in hypoxia of the cells of the central nervous system already damaged by the poliomyelitis virus and aggravates the damage. Circulatory insufficiency due to medullary center involvement is a serious condition in bulbar poliomyelitis with an extremely grave prognosis.

PROBLEMS OF NUTRITION

Since the patient with bulbar poliomyelitis can take nothing by mouth, nutrition and hydration are important problems. Feeding must be done either by hypertonic solutions given intravenously or by stomach tube. Intravenous feedings include glucose in concentrations up to 20 per cent intravenously to provide some part of the caloric requirement. Plasma may be given as a protein food, and whole blood may be necessary to maintain the hemoglobin. It is not possible with parenteral feeding alone to maintain the caloric requirement of the patient. If care is taken, a nasal tube may be inserted into the stomach and high caloric diets administered slowly to provide the additional proteins, vitamins and fats necessary to maintain the normal metabolism. A number of commercial diets are available that provide approximately two calories per cc. of diet based on milk, casein and edible fats and vitamins. A patient who can be fed by stomach tube will maintain his nutrition and weight far better than the patient who must be fed parenterally.

The patient who must be maintained on parenteral fluids runs the dual danger either of overhydration, with resulting pulmonary edema, or inadequate hydration, with the resulting dehydration fever. It has been found that for the patient with normal renal function, the urine specific gravity is a good index of hydration. If the specific gravity of the urine is kept between 1.020 and 1.025, there will neither occur overhydration to the point of pulmonary edema nor dehydration which may result in fever or other complications.

PROBLEMS OF IMMOBILIZATION

The patient with bulbar and spinal poliomyelitis requires the same type of care for his spinal involvement that the patient without the bulbar involvement requires. Correct bed posture on a flat, firm orthopedic bed with a footboard and positioning of joints to prevent contractures is equally as important for the bulbar poliomyelitis patient as for the patient with pure spinal involvement. Relief of pain and tightness as quickly as possible should be done both to give the patient additional comfort and to prevent the development of fibrous contractures which may seriously limit the patient's later rehabilitation. Activity should be initiated in all joints early and carried on at least twice a day attempting to regain and maintain full range of motion. Patients who are carried through the full range of joint motion with stretching of tight muscles actually feel better and recover faster than patients who are immobilized in a fixed position. Hot packs for muscle tightness produce relief of pain and allow a greater range of pain free joint motion during stretching. Either wrap packs for twenty minutes, or hot packs laid over the tight or tender muscles for ten minutes and changed three times, are applied four times a day. After each set of packs the muscles are moved through the full range possible.

A common complaint of a patient in a respirator is "respirator backache," due to immobilization of the back with resulting muscular edema, stiffness and soreness. This can be relieved to a large extent by hot-packing and massage twice a day.

Patients who are immobilized in the respirator frequently develop decubital ulcers of the skin over the bony prominences. The cause of the decubital ulcer is prolonged pressure, collapsing the capillaries and preventing the flow of blood through an area of skin. Because of this decrease of circulation there is insufficient food and oxygen for the normal cellular metabolism. In addition, waste products accumulate in the extravascular spaces. Both lack of food and accumulation of wastes impair the metabolism and strength of the cell. If there is prolonged pressure and ischemia the cells die and slough. Continuous pressure causing complete collapse of the capillaries to an area for more than thirty minutes will seriously damage the cells. The skin over the bony prominences is exposed to more pressure than other areas of the body and is more likely to break down if the patient is not turned frequently. It is necessary for the maintenance of the patient's skin that, in addition to frequent turning, he be given adequate skin care of massage, alcohol rubs and powdering to keep the skin dry. Pressure points over the sacrum, heels, trochanters and knees, and also the back of the neck, if in the respirator, should be relieved by proper padding.

Thrombophlebitis also is a danger facing any patient immobilized in a respirator for a period of time. The relatively increased intrapulmonary pressure during the inspiratory phase of respiration in the respirator compared to the venous pressure of the splanchnic bed and the lower extremities results in venous congestion in the lower part of the body. This predisposes the patient to thrombophlebitis. In addition to this, the immobilization and inactivity aggravate the condition. Prevention of thrombophlebitis can be aided by carrying out passive movements of the hip, knee and ankle joints many times a day, massage to the muscles of the lower extremities if they are not tender and electrical stimulation to the calf muscles to aid the venous return by the pumping action of the muscle.

SUMMARY

In the presence of bulbar poliomyelitis, with or without involvement of the muscles of respiration, the loss of the centers which automatically control circulation and respiration makes it necessary that the physician carry on a great many functions which occur automatically in the normal individual. This results in emphasis on a type of nursing care which may not be important for the average hospital patient. Emphasis on these details frequently is the difference between success or failure in saving the lives of these patients.

CERTAIN PROCEDURES FOR THE SURGICAL REHABILITATION OF THE HAND IN POLIOMYELITIS

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THE CONTINUED high incidence of poliomyelitis in many parts of the United States in the last few years has produced an increasing number of patients with varying amounts of residual involvement. Therefore, there are a greater number of patients whose paralysis includes protions of the forearm and hand and, quite frequently, in addition, they have significant involvement in parts of the lower extremities and the body. Quite naturally, in his own mind the patient may look forward to the time when he can again walk and get about in a nearly normal manner since one generally thinks of paralysis in poliomyelitis as producing crippling in the lower extremities.

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Almost without exception, however, adequate use of the hands is by and large much more necessary for the patient's ultimate employability and overall happiness. Often commonplace acts of eating, drinking, brushing one's teeth, shaving



Fig. 1. Simple type of opponens splint made from plexiglass. Note that the thumb is held in position of abduction, thereby preventing contracture in the first web space between the first and second metacarpals.

and bathing oneself are not given their proper emphasis. In order that these acts can be performed successfully, one must have adequate grasp and some semblance of the ability to pinch. Furthermore, these two abilities, namely of grasp and pinch, are interrelated. One has only to observe the remarkably coordinated movements of the hand in the performance of these various necessary acts in order to appreciate how the thumb and especially the first two digits work together in a most intricate manner. Indeed, even with normal flexion of the fingers and extension of the wrist, the ability to oppose the thumb so that it comes to lie on top of the flexed fingers contributes in large measure to the efficiency of grasp itself.



Fig. 2. Aluminum hand and wrist splint with detachable apparatus for the protection of intrinsic muscles. The wrist is held in slight dorsiflexion, the thumb in a position of opposition, and the extra lumbricales bar and elastic extensor appartus assist in the functions of flexion at the metacarpophalangeal joint and extension at the distal interphalangeal joint.

The muscles motivating the thumb, including the group of the thenar eminence which participate in the act of pinching, are commonly involved by the paralysis of poliomyelitis.

THE IMPORTANCE OF PROPER EARLY TREATMENT

From the time of onset of weakness of true paralysis involving the forearm and hand, the first consideration must be given to the maintenance of normal alignment of the thumb, fingers and wrist and the prevention of progressive contractures followed by fixed deformity of the bones of the hand. Too much emphasis can not be placed on the need for properly fitting splints which maintain the hand, fingers and thumb in a position of function (fig. 1). In most situations a simple removable so-called opponens splint made of plaster of paris, plexiglass or other plastic materials may be adequate. When the involvement includes not only the thumb ray but the intrinsic muscles of the fingers, especially the interossei or lumbricales, more elaborate splints may be necessary. The aim remains to maintain the hand and fingers in a position for adequate function (fig. 2). Such splints should be worn all night and as much of the day as necessary to prevent progressive contractures. Motion of all joints must



Fig. 3. Position of thumb with paralysis of the muscles of the thenar eminence. The thumb is adducted, externally rotated and when attempting to pinch the patient cannot oppose the thumb to the index and long fingers.

be instituted as soon as tolerated and increasing mobility should be gained by carefully planned daily passive and active movements to maintain joint mobility. In a large measure the ultimate functional use of the hand depends directly on the adequacy of care during the first few months following paralysis from poliomyelitis. Certainly the ultimate prospects of surgical rehabilitation are much more favorable and procedures can be more readily performed if the early care has been proper.

The most successful program for rehabilitation requires that there be continued coordination and cooperation between all those who are at the onset or subsequently will be responsible for the several aspects of the patient's over-all treatment program. Each individual patient must be thoroughly evaluated as a whole and a careful analysis of the deficiencies made with due concern for the interdependence in function of the upper and lower extremities in locomotion and functional self-sufficiency. Furthermore, one must keep in mind constantly the long term program and consider carefully the timing of any surgical procedure to the hand in relation to the patient's overall activities of walking, especially with crutches, stair climbing as well as individual acts requiring adequate use of the hands themselves. The most important function of the shoulder and

arm is to get the hand where the individual needs to use it. If the hand is unable to function in accomplishing grasp or in pinching objects, the true use of the upper extremity is minimal. As previously mentioned, grasp and pinch are intimately related and almost without exception some involvement is found in the muscles of the thumb whenever the upper extremity itself is paralyzed. In order to illustrate the point, several common examples of functional deficiency from paralysis in poliomyelitis will be described.

OPERATIVE TREATMENT

The tell tale atrophy of the thenar eminence indicates paralysis of three important muscles in the successful function of the thumb. These are the abductor pollicis brevis, the opponens pollicis and the flexor pollicis brevis. Even in the presence of normal power in the extrinsic long tendons,

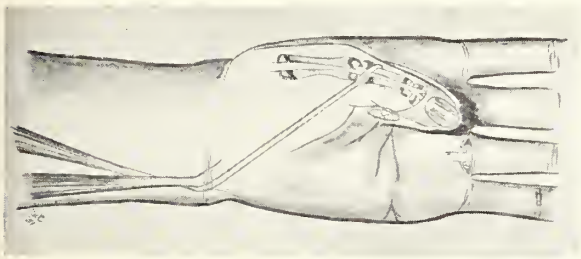


Fig. 4. By rerouting the sublimis tendon of the ring finger around the flexor carpi ulnaris over to the base of the proximal phalanx of the thumb, successful opposition is restored. This straightforward operation supplies a satisfactory answer to one of the most common motor deficiencies of the hand in poliomyelitis.

namely flexor pollicis longus, the extensor pollicis longus and abductor pollicis longus, the thumb tends to occupy a position anatomically and functionally similar to that of the ape. It can no longer participate with the index and long fingers in either pinch or grasp and the thumb tends to lie in a cocked back location and adducted and externally rotated position which, from a functional point of view, is inadequate. Such a patient then attempts to pinch by false opposition, or apposition, with little success (fig. 3). If this abnormal attitude is allowed to persist, contractures occur in the soft tissue so that even passively the thumb cannot be brought into a functional position. Herein lies the importance of proper splinting and adequate attempts at mobilization and flexibility of the involved joints during the early months following paralysis.

Fortunately, providing these criteria are satisfied, a number of surgical procedures are available to restore the function of opposition and improve both grasp and pinch. The most successful and straightforward procedure, as described by Irwin,[1, 2, 3] employs the sublimis tendon from the ring finger, which is divided distal to the metacarpophalangeal joint, withdrawn to the lower forearm, brought around the tendon of the flexor carpi ulnaris, thence through a subcutaneous tunnel over the thenar eminence and finally inserted through bone in the proximal phalanx of the thumb from the ulnar side (fig. 4). Providing there is sufficient power in the profundus tendons to the fingers, there is no significant weakening of finger flexion. This procedure is not difficult technically and occupies a place of primary importance because of the frequency with which it can be performed to excellent advantage in restoring one of the most commonly encountered deficiencies from paralytic poliomyelitis in the hand (fig. 5).



Fig. 5. Hand of the same patient shown in figure 3. Note the effective pinch even of a small object following a standard opponens transfer as described in figure 4.

There are a number of variations by which similar results can be obtained when all of the necessary criteria for the performance of a so-called opponens transfer are not present. For example, in the presence of hyperflexion of the metacarpophalangeal joint of the thumb often accompanied by weakness of the long extensor, the functional adequacy of pinch and grasp is severely reduced (fig. 6). A solution to this problem frequently is found by means of surgical fusion of the metacarpophalangeal joint in slight flexion. Thereby, the thumb is converted into a longer ray but still retains rotation of the carpometacarpal joint and in combination with the necessary tendon transfers becomes a useful digit (fig. 7).

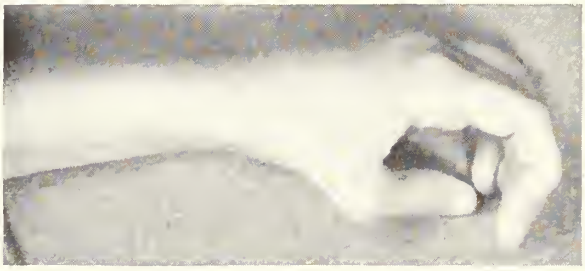


Fig. 6. The adequate use of the hand is limited by the hyperflexion of the metacarpophalangeal joint of the thumb. The ability to pinch is markedly restricted.

Space does not permit a discussion of the problems presented by severe involvement of other muscles necessary for satisfactory function of the hand. It must be kept in mind, however, that the same principles apply and that unless there

is almost complete paralysis of the majority of muscles, appropriate beneficial surgical procedures are available to improve the necessary functions. Whereas it is always desirable to seek the restoration of a completely normal function of the hand, one must remember that even slight improvement in a few essential movements may make a world of difference to the patient himself. Thus, even to restore the ability to scratch one's nose or pick up a small coin may change the patient's entire outlook on future possibilities. With proper early treatment and carefully planned operations in combination with assistive types of splints and apparatus, it is truely remarkable how much can be accomplished in an apparently hopeless situation.



Fig. 7. Same patient as shown in figure 6 following fusion of the metacarpophalangeal joint of the thumb and standard opponens transfer. Note the excellent contact of the pad of the thumb with those of the index and long fingers, thereby providing secure pinch.

SUMMARY

1. Increasing numbers of patients with involvement of the hand as well as other parts of the body from paralytic poliomyelitis are coming to the attention of the medical profession.

2. The absolute necessity of proper early treatment in the prevention of contractures, deformities and the limitation of movements of the parts of the hand is underscored.

3. It is essential that the physician, nurse, physical therapist and orthopedic surgeon work together from the onset of paralysis in planning and executing an overall treatment program.

4. If the hand can be maintained in a functional position with adequate flexibility of all its parts a number of surgical procedures are available which can greatly improve the important functions of the hand and ofttimes can even restore normal use.

Georgia Warm Springs Foundation.

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DIFFERENTIAL DIAGNOSIS OF POLIOENCEPHALOMYELITIS

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ST. LOUIS

To be able to make a differential diagnosis of any disease, one needs to be familiar with all its protean manifestations. In polioencephalomyelitis there are usually four stages of variable duration but at any time, however, there may be a cessation of the symptoms in any phase. These so called stages are actually variations in the signs and symptoms presenting depending directly on the intensity and location of the lesion in the central nervous system. A diagnosis of nonparalytic or abortive polioencephalomyelitis is based on the failure to develop progressive manifestations of polioencephalomyelitis during an epidemic of the disease.

There is nothing too characteristic of the first stage. In reviews of large series, 98 per cent showed moderate fever, 33 per cent had headache, another 33 per cent had nonspecific symptoms of malaise, pharyngitis, coryza, nausea, vomiting, diarrhea and constipation. These latter signs and symptoms are actually of little diagnostic help, being frequent childhood complaints. However, if there is polioencephalomyelitis in the community, or there is a history of association with another child with a similar febrile episode or association with a proven case of polioencephalomyelitis, one should do repeat careful examinations and stress the importance of adequate rest with avoidance of chilling, fatigue and excitement.

These manifestations of the first stage, of which two or three are usually present, lead after from three to five days to the second stage. The time interval is only approximate and may vary considerably, but the invasion of the central nervous system plays the causative role in regard to the clinical manifestations of this phase. The elevated temperature, which had subsided almost to normal, again rises, giving the typical double humped curve or bactrian outline. The patients complain more severely of headache associated with anorexia and increasing irritability. The facies is apprehensive and flushed and sudden repeated forceful emesis is common. If allowed to, the patients tend to drop off to a restless sleep. The fever continues to rise, varying between 101 F. and 103 F., and is prone to remain at this level. Perspiration is excessive, almost to the point of annoyance. The sore throat may abate somewhat. By the middle of the second day irritability and hyperesthesia have become more noticeable. The patients do not want to sit up and, when they do, do so in a characteristic manner. They either roll to one side and push up or put their hands back and push up from the

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bed, maintaining a fairly rigid back. This back stiffness is one of the earliest signs noted. A similar type of stiffness may be elicited in the extremities with reduced threshold for the stretch reflex and apparent pain in attempted extension. This limitation produced by spasm of muscle group is a distinct and definite one and is usually obtained at the same critical angle during passive motion through normal arc of action. The deep reflexes may be slightly hyperactive. Usually two or three days pass during which these signs and symptoms of central nervous system irritation develop before true paralysis of one or more muscle groups becomes evident. Vomiting diminishes unless higher centers are involved. Constipation occurs with great frequency. If high nerve centers show no involvement, most signs and symptoms disappear in from six to eight days although muscle tenderness and tightness persist for a longer period.

With a persistency of the fever, manifestations of the third stage are noted. Paralysis supervenes and may occur as early as the first day or as late as the seventh. The paralysis is usually heralded by involuntary tremors, often to the point of ataxia due to vestibular involvement. The deep reflexes are usually diminished or absent before there is a loss of strength in the muscle group. In infants this is often hard to determine because of muscle spasm and tenderness associated with apprehension and anxiety. It is only following relief of spasm that paralysis is evident. There is a predilection for various spinal cord segments manifested peripherally by paralysis of muscles of the quadriceps, anterior tibial, peroneal, deltoid and triceps. Paralysis usually reaches a maximum by the fifth day. About 50 per cent of the cases show paralysis of the legs alone while from 80 to 90 per cent show involvement of the arms and legs. Only 10 per cent show involvement of the arms alone. With the development of paralysis, there is usually a regression of the fever. One then has the fourth stage or stage of recovery. Only brief mention will be made of the involvement of the bulbar area as this will be presented more fully. Suffice it to say that the signs of bulbar involvement present rapidly. They may be heralded by regurgitation through the nose, rapid development of subdued speech, quick grunting respirations, pathetic distressed facial expression and the clinical evidence on examination of paralysis of the palate, pharynx, the facial muscles or the tongue. This emphasizes the need for careful close observation of the patient. In the majority of the cases there are additional manifestations that may be classified under the term encephalitic and are clinically represented by hyperexcitability, restlessness, excessive irritability, mental confusion, insommia, apprehension, anxiety and "a feeling of impending death." These subside usually with the regression of temperature elevation to normal.

The only laboratory procedure of specific significance is the examination of the spinal fluid. During the early phases of the disease the lumbar taps reveal little. With evidence of central nervous system involvement there is a slight polymorphonuclear pleocytosis. When weakness appears the cell counts range from 15 to 200 per cm., seldom exceeding from 400 to 500. These are chiefly lymphocytes. Increased protein is usually demonstrable and may persist even after cells have disappeared. In general this examination only confirms the clinical impression.

In the diagnosis of polioencephalomyelitis other diseases might be considered. Lymphocytic choriomeningitis usually is seen in the 20 to 40 year old age group with a prodrome of a grippelike symptoms followed in twenty-four hours by onset of clear cut meningeal signs. The mode of onset, mononuclear pleocytosis, short clinical course and absence of foci of infection easily differentiate this disease. St. Louis, equine and mumps encephalitis may be impossible to differentiate clinically in the early stages but careful observation for the development of encephalitic signs in relationship to the paralysis helps in the differentiation. Acute bacterial infections of the meninges usually cause an abrupt unrelenting headache, vomiting and fever. Nuchal rigidity and positive Kernig are early signs. The characteristic spinal fluid and the failure to show paralysis differentiates the meningitides from polioencephalomyelitis. Rheumatic fever, with splinting of the joints early in the course of the disease, may occasionally lead to a faulty diagnosis. A difficult disease to differentiate is the Guillain-Barré Syndrome in which the prodromal manifestations are quite similar to polioencephalomyelitis. The presence of paresthesis, pain, sudden onset of symmetrical weakness in the lower extremities with ataxia out of proportion to weakness, diminished to absent reflexes, normal temperature, elevated pulse and respiration are suggestive. The high spinal fluid

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protein increased 50 per cent or more with slight pleocytosis confirms the diagnosis. The symmetrical progressive spread of the disease is characteristic compared with the patchy involvement in polioencephalomyelitis.

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RAPID STRIDES MADE IN EMERGENCY MEDICAL CALL PLANS

Rapid strides have been and are being made in the development of emergency medical call systems, the Council on Medical Service of the American Medical Association reported.

Today, approximately 80 per cent of the country's large medical societies have such plans, the council reported. In 1948, it pointed out, only about sixty medical societies reported having a formal plan for handling emergency and night calls. In 1949, the number of such plans rose to between 100 and 120.

At the end of 1951, 364 emergency medical call systems were in operation, according to the council. Of the forty medical societies with 200 to 300 members, twenty-nine had such plans, while sixty-three of the seventy-one medical societies with a membership in excess of 300 had such systems.

Despite such impressive progress, the council urged all counties where such plans were not in operation to begin developing one immediately.

"Development of an efficient emergency call plan is an important step any medical society can take toward assuring the public that medical care will be available when needed," it stated.

"While every county or city has real emergency cases, not every county medical society needs a formal or organized program for handling emergencies.

"Those counties with few residents and few physicians may effectively rely on the normal physician-patient relationships in emergencies. In the heavily populated county, on the other hand, the greater number of physicians not only makes it difficult for the patient to check through the whole list to find one available, but also makes it difficult for physicians to make any informal arrangement for one of their number to be on call at all times."

The council warned that public neglect or abuse of any medical service program can cause its failure, adding:

"The citizens, too, have a responsibility in their local emergency call plan, namely, to use the service only when necessary. This should be clear to them from the outset. Emergency call plans are for the benefit of the public and require the cooperation of the public."

A study of the emergency call plans now in operation has shown that types of plans vary with locality and population needs, according to the council's report.

In some counties where the population is quite small and there are few physicians, the only possible plan is an agreement among physicians that one of their number will be available at all times.

Among other small medical societies, the local hospital (or hospitals) is an acceptable agency through which emergency calls may be handled. In such communities, all or nearly all of the physicians are staff members of the local hospital (or hospitals), and its switchboard provides the most convenient central office for receiving calls and contacting physicians.

In heavier populated areas, the best plan has been that of private telephone exchange switchboards, telephone answering services, or both.

"Medical societies have a definite function to perform in making sure that no emergency call goes unanswered," the report concluded. "Individual physicians, of course, provide the medical service, but medical societies must provide for unity and direction of individual physician effort to the end that all emergency calls are cared for promptly.

"Having arranged for medical care emergencies, it then behooves the medical society to publicize this program widely and continuously. Regardless of the type of emergency call program developed, the effort will be lost unless the public is aware of it and how it should be used."

URGES REQUIREMENT OF ADDITIONAL AUTOPSIES

More autopsies should be required by law, as many deaths now attributed to natural causes are the result of injuries not apparent on the surface of the body, according to Dr. Frank R. Dutra, of Cincinnati.

This failure to recognize deaths resulting from injuries predisposes inequities of insurance settlements, inability to prosecute murderers, and inaccuracies in vital statistics, Dr. Dutra stated in the February 9 *Journal of the American Medical Association.*

"In the investigation of deaths that have occurred unexpectedly and without reliable witnesses, autopsies not infrequently disclose cases in which unsuspected injuries were the immediate cause of death, even though there were no evidences of injury on the surface of the victim's body," he stated.

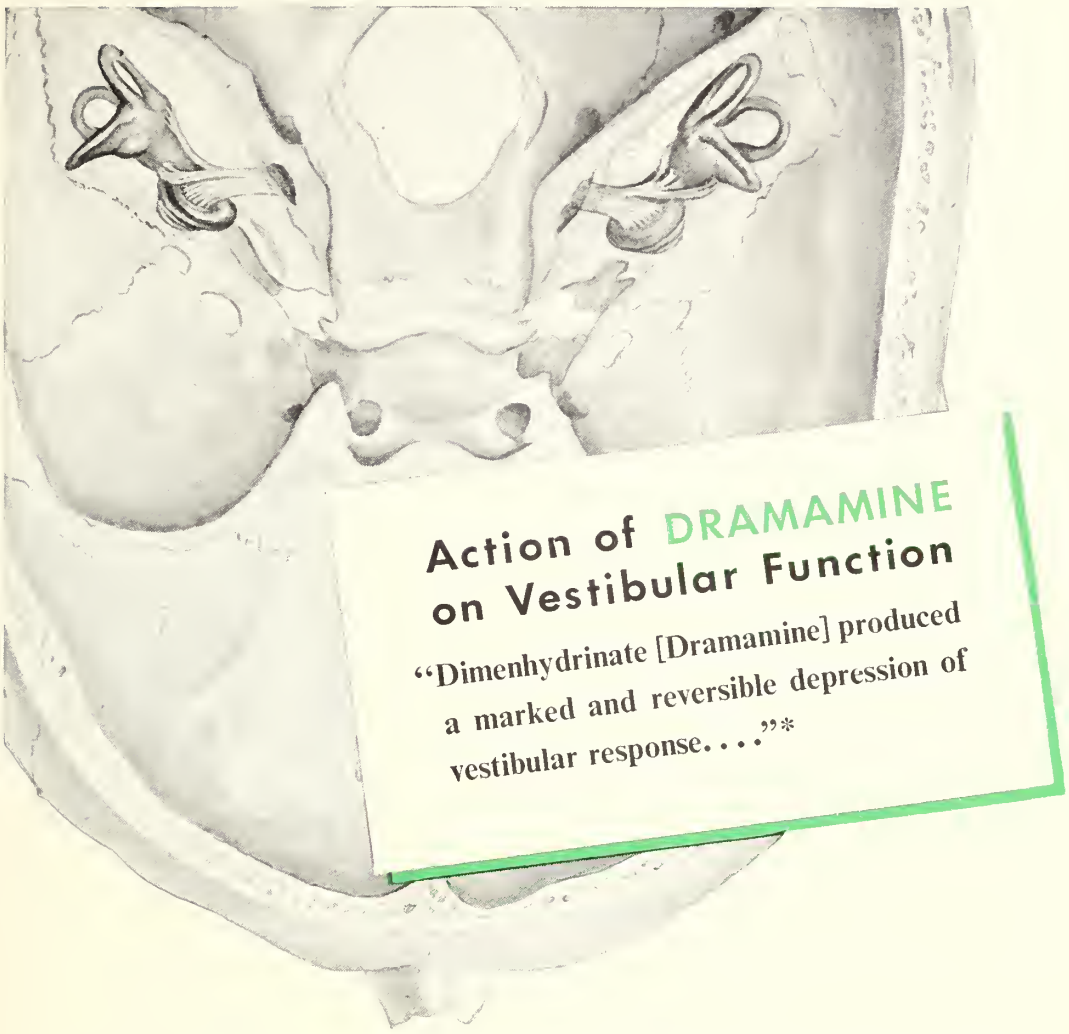
"It is probable that each year many unexpected or sudden deaths not due to natural causes are ascribed to such causes by coroners or attending physicians."

Some examples of fatal injuries which may be unaccompanied by external marks were related by Dr. Dutra. They include internal or head injuries received in a fight or fall; injuries received upon being struck by an automobile or being in an automobile accident; stab wounds of the head made by slender instruments, such as an ice pick or knife with a thin blade; wounds made by bullets entering through one of the body's natural openings, and wounds made by bullets of small caliber.

"It is impossible to estimate how many homicides by direct violence remain undiscovered in the United States each year," Dr. Dutra stated. "Doubtless, the number of such deaths varies considerably in different areas and is inversely related to the proportion and adequacy of the postmortem examinations made on bodies that come under the jurisdiction of the coroner or medical examiner.

"The number of traumatic deaths in which the factor of violence remains unrecognized can be diminished only by increasing the frequency of medicolegal autopsies throughout the country."

Dr. Dutra is associated with the coroner's office of Hamilton County, Ohio, and the Kettering Laboratory in the department of preventive medicine and industrial health, College of Medicine, University of Cincinnati.



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*Gutner, L. B.; Gould, W. J., and Batterman, R. D.: Action of Dimenhydrinate (Dramamine) and Other Drugs on Vestibular Function, Arch. Otolaryng. *53*:308 (March) 1951.

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Postgraduate Review

A REVIEW OF HISTAMINE AND ITS CLINICAL USE

ARTHUR E. SCHMIDT, M.D.
CHICAGO, ILL.

HISTAMINE, (beta-iminazolylethyl-amine), was first synthesized by Windaus and Vogt[1] in 1907. An interesting paradox is that not until three years later, in 1910, was it isolated from ergot by Barger and Dale.[2] Since in recent years there has been a great deal written on the subject, especially in the field of therapeutics, it is the purpose of this paper to review the results of these studies to date, to correlate them and to discover the paths for future study into which they lead.

Histamine was first used as a therapeutic agent by Ramirez and St. George[3] in 1924 in the treatment of ten cases of endogenous asthma. While the results of this study were not encouraging, nevertheless it was a new approach. Horton[4] in 1927 described two cases of allergy to cold which demonstrated well the threefold reaction to local skin irritation as described by Lewis.[5] This consists of: (1) local reaction at the site of irritation; (2) local release of histamine at the site of irritation giving a wheal immediately surrounding it, and (3) further release of free histamine to the circulating blood. Horton found that the same clinical picture as that occurring spontaneously, except for the local reaction, could be produced by the subcutaneous injection of 0.5 mg. of histamine and postulated the two following possibilities for treatment: (1) "Passive desensitization by repeated injections of histamine over long periods of time in minute doses insufficient to produce a systemic effect, and with a gradual increase in the dosage," and (2) "Autodesensitization by allowing the patient to desensitize himself by daily immersion in cold water, decreasing in temperature for increasing periods of time." The latter method was chosen in these two cases with complete cure in one and continual improvement in the other, as long as she was followed.

In subsequent reports Horton et al.[6, 7, 8] reviewed the literature and collected twenty-two cases. They set up a successful regimen of treatment which consisted of subcutaneous injections of 0.1 mg. of histamine or less given twice daily over a period of two to three weeks. Bray[9] used 0.1 mg. of histamine as an initial dose and increased each subsequent daily dose by 0.05 mg. until 0.9 mg. was given. This was repeated four days and then 1.0 mg. of histamine was given for five days. He reported the successful treatment of one case. Saylor and Wright[10] using Bray's regimen treated two cases and obtained 60 per cent improvement with steady continuing improvement at the time of their report.

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HISTAMINE CEPHALALGIA

In September 1937, histamine cephalalgia was first encountered and recognized at the Mayo Clinic by Horton, MacLean and Craig.[11] This syndrome was described as unilateral headache beginning in the latter decades of life; of short duration, usually less than one hour; starting and terminating suddenly; tending to awaken the patient at night one to two hours after going to sleep, and frequently eased by sitting up or standing erect; and associated with profuse watering and congestion of the eye, rhinorrhea or stuffiness of the nostril, increased surface temperature and, often, swelling of the temporal vessel of the involved side of the head. Pain is the outstanding complaint. It is constant, excrutiating, burning and boring. It involves the eye, temple, neck and often the face. So severe and frequent are the attacks (as often as twenty times a week) that practically every patient had contemplated suicide. The pain is not confined to the distribution of any cranial nerve but has a tendency to conform to the ramifications of the external carotid artery. In the first stages of an attack, compression of the common carotid artery, and sometimes the temporal artery, frequently gives prompt relief. Some patients have discovered this fact for themselves.

It was noted[11] that histamine induced the attacks and the first patient seen with this syndrome was given 0.5 mg. of histamine daily by subcutaneous injection in order to study the disease. Succeeding attacks became progressively less severe and more difficult to precipitate. The patient was then given 0.1 mg. twice daily for three weeks. He became free from all attacks after five days of this regimen. In a later report,[12] Horton outlined the following method of treatment. A solution of 0.1 mg. of histamine per cubic centimeter was used and injections were given twice daily. The initial dose was 0.25 cc. with each subsequent dose increased by 0.05 cc. until a dose of 1.0 cc. was given. This was repeated for a minimum of four doses. The course of treatment was from ten to twenty-one days after which the patients were placed on maintainance doses of 0.1 mg. from one to four times a week, with the majority requiring two doses a week. If flushing or any untoward reaction occurred the next dose was reduced in half and the treatment proceeded from that point. In a recent review of the treatment of headache[12] Horton and Macy stated that "desensitization" with histamine was the only method effective in preventing furthur attacks of histamine cephalalgia; and that nicotinic acid had no effect on these headaches. Table 1 shows the results of the treatment of 161 cases of histamine cephalalgia by Horton and others.

MENIERE'S SYNDROME

In August 1939 Sheldon and Horton[19] found that following treatment of a case of histamine cephalalgia with subcutaneous histamine, the coexisting Meniere's syndrome was also relieved. Two other cases were treated in a like manner with the same good results. Following a report by

Table 1. *Histamine Cephalalgia*

Author	Number of Cases	Permanent Relief Excellent Results	Good Results	Fair Results	No Benefit
Horton et al.[11, 12, 14]	75	65	0	0	9
Becker[15]	30	30	0	0	0
Leider[16]	4	4	0	0	0
Dixon[17]	20	11	7	1	1
Hansel[18]	32	29	0	0	3
Total	161	139	7	1	13
Per cent	100	86.5	4.5	0.7	8.3

Alexander and Elliott[20] to the effect that the use of histamine by the intravenous route gave better results than the subcutaneous route in the treatment of their cases of chronic urticaria, this method was employed with excellent results.[19, 21] This, as modified, consisted of an intravenous infusion of 1.0 mg. of histamine as 2.75 mg. of histamine di-phosphate in 250 cc. of physiologic saline solution given at a rate of 50 to 60 drops a minute over a period of approximately one and one-half hours. This was repeated on successive days until the symptoms subsided; and the patients were then placed on subcutaneous maintainance doses of from 0.1 to 0.2 mg. of histamine given two to four times a week. They noted that recurrences, when they do occur, usually follow upper respiratory infections. Rainey[22] reported that a number of cases were benefited by intravenous histamine whereas previously subcutaneous histamine had been unsuccessfully employed. McLaurin[23] using histamine azo-protein (Hapamine), obtained complete relief in forty cases of vertigo. The results of more than 200 cases of Meniere's syndrome treated with histamine are tabulated in table 2.

Some interesting theoretical considerations were introduced by Atkinson[27] in 1941. He divided Meniere's syndrome into two categories: allergic and vasospastic. The allergic group was small, consisting of seven cases, and exhibited allergic tendencies, responded to elimination of the specific allergen when this could be determined, had universally excellent results from histamine "desensitization," and exhibited a positive response to 0.1 mg. of histamine injected intradermally. A positive test consisted of the following: (1) an area of erythema 1½ to 2 inches in diameter, (2) a wheal ½ to ¾ inches in diameter, and (3) long trailing pseudopods at least one inch in length which begin to appear in from three to five minutes, begin to fade in twenty minutes, but are still apparent in thirty minutes. Small buds at the edges of the wheal lasting from ten to twenty minutes do not constitute a positive test. Most investigators now feel that the pseudopods represent extension of the reaction into lymphatic channels and are not an integral part of the test. They are further agreed that the skin test with histamine is useless in determining whether or not the patient will have a therapuetic response to the drug, not only in Meniere's syndrome but in all conditions for which the drug has been given as a therapuetic agent. The larger group Atkinson described as vasospastic. In this group attacks could be induced by 1.0 cc. of adrenaline (1:1000) given subcutaneously and could be stopped with amyl nitrite in doses that did not cause a fall in blood pressure (in one patient with 125 mg. of acetylcholine), with intramuscular nicotinic acid and with histamine in doses large enough to cause a pronounced vasodilatation. In these cases those of middle age tolerated the nicotinic acid best and received better results. Of the nineteen patients treated with nicotinic acid, seventeen were relieved or exhibited steady improvement until the report was made. The other two relapsed after initial improvement. Continual maintenance therapy was necessary with this form of treatment.

MENIERE'S SYNDROME AND MIGRAINE

In a later paper Atkinson[28] proposed the existence of a common causal reslationship between

Table 2. *Meniere's Syndrome*

Author	Cases	Symptom	Permanent Relief	Markedly Improved	Considerably Improved	Slightly Improved	No Benefit
Horton et al.[19, 21]	49	Vertigo	49	0	0	0	0
	33	Tinnitis			Less than 50%		Over 50%
	32	Decreased Hearing			Few		Most
McLaurin[23]	40	Vertigo	39	1	0	0	0
Horton et al.[24]	23	Vertigo	19	2	0	0	2
	24	Tinnitis	2	8	0	3	10
	25	Decreased Hearing	0	6	3	3	13
Harris[25]	112	Vertigo	87	0	0	0	0
		Tinnitis	71	24	13	0	4
		Decreased Hearing	0	89	0	0	0
Ingham[26]	2		2	0	0	0	0
Atkinson[28]	7	Vertigo	7	0	0	0	0
	7	Tinnitis	0	0	5	0	2
	7	Decreased Hearing	0	0	5	0	2

	Vertigo	Tinnitis	Hearing
Total	206	176	153
Improved	204	138	110
Per cent Improved	99	78	72

Meniere's syndrome and migraine. Figure 1 illustrates this well. (From Atkinson's paper.)

There were 108 cases classified as follows:

Total Meniere's	108
Vasodilating type	20

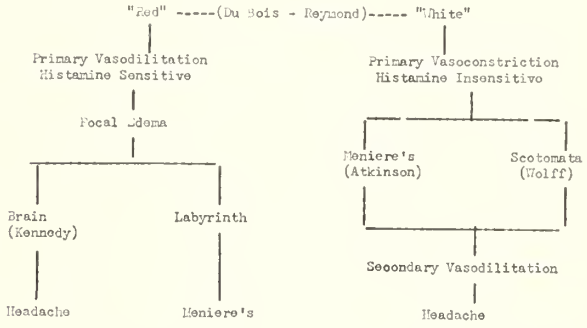
Vasoconstricting type	88	
Cases with migraine		22
Vasodilating type	10	
Vasoconstricting type	12	
Cases with nonspecific headache		42
Vasodilating type	6	
Vasoconstricting type	36	
Cases without headache		44

It was observed in the cases of Meniere's syndrome with migraine that treatment with histamine frequently abolished or markedly improved the migraine.

MIGRAINE

It can be seen from Atkinson's studies[28] that there is reason to believe that two types of migraine may exist. Thomas and Butler[29] are also of this opinion. Wolff et al.[30] have demonstrated the dual mechanism in migraine. Their studies show that the pre-headache phenomena (aura), which are nonpainful, are due to vasoconstriction of the vessels within the cranial cavity. The secondary painful phase, the headache, is associated with vasodilatation and is related to changes in the amplitude of pulsation of the cranial arteries, chiefly the external carotids. This sustained vasodilatation, whatever its cause, produces a thickening or edema of the muscular and adventitial layers of the vessel wall. A sustained contraction of the muscles of the head and neck follows, which may actually outlast the vasodilatation. This phenomenon may occur with head pain of any type. Weiss[31] demonstrated the extreme sensitivity of the cerebral blood vessels to histamine. With continuous intravenous administration of histamine at a rate of 0.003 to 0.008 mg. per minute there was an increase in the pulsatile expansion of the cerebrospinal fluid, which was not associated with an increase in the pressure. Even with an increase in pressure and an increase in pulsatile expansion to from three to four times normal, there was insufficient histamine effect to produce an increase in the heart rate, a dilatation of the cutaneous blood vessels or any change in the arterial or venous blood pressures. There was no associated changes in the vessels of the eyegrounds during the infusion. The lack of vasodilatation of the vessels of the eyegrounds has been subsequently confirmed by Thomas and Butler.[32] These changes have been observed directly in several cases during craniotomy.

Thomas and Butler[33] believe that migraine is precipitated by a release of histamine to the blood as a result of an alergic reaction; and that major attacks of migraine only develop in those individuals whose tolerance to histamine is low and who would be hyper reactors to intradermal histamine at one phase of the syndrome. They feel that this represents a lowered tolerance to histamine rather than a true allergy because of the normal occurrence of histamine in all the cells of the body. An inadequate response of histaminase under conditions of stress could be the primary physiologic pathology. Thomas and Butler[32] believe that the pathologic physiology consists of: (1) vasoconstriction of the internal carotid artery producing the aura which is cortical in origin and involves the cranial nerves, especially those of sensory function; and (2) the headache itself produced by vasodilatation of the external artery.



That vasoconstriction occurs during migraine attacks has been demonstrated[34] by the observance of a marked intermittent vasoconstriction of the vessels of the eyegrounds in some cases. Never during any stage, however, was vasodilatation observed. Histamine cephalalgia, which is a phenomenon of internal carotid dilatation,[35, 36] could well fit the primary vasodilating, histamine sensitive category of Atkinson's classification.[28] The vasodilator headaches of Wolff[37] and the atypical migraine of Horton and Macy,[38] which seem to be the same clinical entity, could also fall into this category. These headaches are described as having no true aura and no separate distinct stages. They may be bilateral and may last many days with a sore tender scalp. They are a nonpulsating, chronic, vasodilatation and are not the result of anxiety, nervous strain or psychosomatic disturbance. There is no relation to purine ingestion, pregnancy or inheritance; and the history gives no previous cyclic vomiting and no subsequent vertigo. Butler and Hall[39] observed a good response in these patients to the intravenous administration of histamine and found that psychotherapy was of little value. They mentioned that these vasodilator headaches had not been discussed previously as a clinical entity, except by Wolff, because they were generally not separated from migraine except when migraine was considered under strict criteria.

Thomas and Butler[33] first reported on the use of histamine given by intravenous infusion in the treatment of migraine and set up the following criteria for the diagnosis of this disease:

(1) Paroxysmal and unilateral headaches which are usually postorbital.

(2) They are frequently preceded by auras and prodromes of many cranial nerves—especially vision, hearing, taste, smell and various cutaneous sensations as well as a disturbance in equilibrium.

(3) Allergic manifestations occur frequently, especially to foods and chocolate in particular.

(4) There is frequently a familial history of migraine.

(5) Nausea and vomiting frequently occur during attacks.

(6) Migraine equivalents frequently alternate with typical attacks.

(7) Patients are free from symptoms between attacks.

(8) Sinusitis, neuralgia of the face or scalp, hypertension, brain tumor, skull injury and eye strain must be ruled out as a cause of the headache.

The original method of treatment used 1.0 mg.

Table 3. *Summary of Results*

Author	Number of Cases	Complete Relief	Temporary Relief and Subsequent Permanent Relief	Partial Relief	Unimproved
Thomas and Butler[29, 32, 33] —Intravenous—	104	42	16	34	12
Horton et al.[38]	19	3	3	8	5
Horton[42] —Subcutaneous—	60	35		25	0
Krueger[41] —Subcutaneous Hapamine—	23	11	0	7	5
Total	206	91	18	74	22
Per cent	44	44	9	36	11

of histamine as 2.75 mg. of histamine di-phosphate in 500 cc. of physiologic saline solution given intravenously at a rate of from five to forty drops a minute. Milk and antacids were given every hour and blood pressures were taken every hour; a drop being an indication for cessation of the infusion. Flushing and headache were controlled by slowing the rate of the infusion and by the intravenous use of from 500 to 1,000 mg. of ascorbic acid or from 0.25 to 1.0 cc. of 1:1000 adrenaline. The infusion was given over a period of at least four hours because histamine is so rapidly taken up by the cells and a prolonged period of exposure was desired. Infusions were given every other day. The main changes in the treatment since this initial report have been to give the infusions daily and to increase the daily dosage up to 4.0 mg. of histamine as tolerated.[40] No patients were treated whose attacks did not interfere with their normal life pattern. The responses were classified as follows. (1) Immediate, complete and apparently permanent; (2) immediate and complete with recurrences occurring in a milder form after weeks or months, and with subsequent relief from subcutaneous histamine; (3) no immediate relief, but relieved after one or more subcutaneous injections of histamine, and (4) no relief. Of thirty-four patients treated, twenty-four were symptom free, seven were improved and three were unimproved. The attacks in these patients occurred on the average of twice a month. All patients were observed for a period of at least six months, seventeen from twelve to eighteen months, and eight for more than eighteen months. Subsequent reports by Butler and Thomas[29, 32] further substantiate the impressions gained in their original report. McLaurin[23] and Krueger[41] reported good results with the use of histamine azoprotein given subcutaneously. Macy and Horton[42] were of the opinion that the combined intravenous and subcutaneous method gave the best results, but that maintenance doses were necessary to prevent recurrences. In a group of twenty patients treated by the method of Thomas and Butler[33] they were unable to duplicate their results. They stated that in view of the fact that their infusions were given at a more rapid rate, the differences may be due to a function of the total dose per unit of time. Wolff[13] commented on the similarity of the results obtained by Thomas and Butler with those obtained by other methods, including psychiatric treatment, but that the dramatic results in some patients in whom all other methods had failed were significant. He suggested controlled studies be done in order to eliminate the large psychic element present in most migrainous patients. Table 3 summarizes the results of the various groups in the treatment of migraine with histamine.

MULTIPLE SCLEROSIS

Putnam[44] in an attempt to clarify the effectiveness of treatment in multiple sclerosis brought out the following facts after prolonged study of 1,407 cases. Approximately 20 per cent obtained spontaneous remissions so complete that a cure seemed apparent. Of these, from 2 to 3 per cent had remissions lasting from 14 to 43 years. There was improvement in 69 per cent, disappearance of the initial symptom in 44 per cent and presumably complete remission in 30 per cent of the cases. Regardless of the treatment used there was some benefit obtained in 47.5 per cent with a range of from 35 to 60 per cent in the various series of cases reviewed. Putnam felt that the criterion of success of any treatment of multiple sclerosis should probably be the prevention of relapse. The difficulty of evaluating any form of therapy in this disease with less than a prolonged period of observation of at least ten to fifteen years is thus obviously apparent.

In recent years histamine has been used in the treatment of multiple sclerosis with encouraging results. Horton et al.[45] using the intravenous route as they did in Meniere's syndrome have treated 102 cases, of which twenty-four were acute and seventy-eight chronic. They gave on the average of forty to fifty treatments per patient. Of the twenty-four acute cases, eighteen are clinically well, one shows 70 per cent improvement, one 40 per cent improvement, and four were not improved. Of the seventy-eight patients with the chronic form of the disease, thirty-six are from 10 to 95 per cent improved, and forty-two show sub-

jective but not objective improvement. They noted a rapid recovery of ocular manifestations when present. Their first three cases are clinically well after more than a year following completion of treatment. Abramson[46] reported eleven cases, nine of which are still under treatment. All the cases showed improvement of muscular or ocular coordination or both. Carter[47] found no improvement in seventeen of twenty cases, with a relapse within six months following improvement in the other three.

Jonez[45] has treated a series of 124 patients with d-tubocurarine, intravenous histamine, diet and physical therapy. He found that nearly all his patients exhibited some form of allergy, with multiple food sensitivities being most common. In this group all exhibited weakness; most of them nystagmus and reflex changes; 50 per cent bladder, speech and gait disturbances, tremor and emotional instability. Quadriplegia, paraplegia or hemiplegia occurred in sixty-three cases confining them either to bed or a wheel chair; and 20 per cent of the cases had pain. Because of its selective affinity for the hyperinnervated myoneural junction, d-tubocurarine was given in doses varying from 7.5 mg. every fourth day to 120.0 mg. daily. Immediate comfort and relaxation was noted, together with a reduction of tremor and spacity so that the extremities could be used. Incontinence, frequency of urination and constipation were either improved or relieved. Dizziness or visual symptoms were controlled by decreasing the dose of the drug. More than 20,000 doses were given without a single undesirable reaction.

Physical therapy consists of hot packs and muscle reeducation exercises. Tiring and massage are to be avoided. Allergic type elimination diets were used as indicated.

Histamine in doses of from 1.0 to 4.0 mg. were given intravenously every six hours for from twenty-four to forty-eight hours of a continual infusion at a rate of thirty drops a minute. Saline and 5 per cent glucose in volumes of 250 cc. were alternated as the medium for the histamine. The best results were obtained in those patients who were able to take large amounts of histamine. A number of patients who failed to respond to histamine elsewhere had a good response. Too little histamine over too short a period of time is probably the explanation for this. Table 4 shows the results of this regimen of treatment. There are good results in 57 per cent of the cases, and some improvement in 90 per cent of the cases. These results are on the average twice those cited by Putnam,[44] and are highly suggestive of a definite advancement in the therapy of multiple sclerosis. It is my opinion that a further and more extensive trial of this form of therapy is warranted in this disease.

SKELETAL DISEASE

In view of the fact that histamine has long been known to have a marked vasodilating effect, an evaluation of its effect in vascular disease, and in skeletal disease where impairment of circulation is or may be a factor, would seem plausible. Actually little has been done in this field. Mackenna[49] used iontophoresis of an ointment containing histamine in the treatment of rheumatoid and osteoarthritis. He obtained dramatic relief in five of six cases and a slow but definite improvement in the remaining case. There was an immediate relief from pain which was either complete or partial, greater range of motion, local warmth and a sense of well being. The course of the disease was not influenced but the fibrositis and neuritis were improved. Shanson and Eastwood[50] also used histamine in the treatment of rheumatoid arthritis with good results, but considered heart disease or hypertension a contraindication to its use. Contrary to Mackenna the subcutaneous route was used and doses of 0.1 to 0.5 mg. were generally employed. This was given from two to three times a week, and the dose was further increased if and when the response to the drug diminished. Improvement was noted in all types of cases, but especially in those with impaired grip from peri-articular arthritis, and those with vasomotor symptoms such as cold and cyanotic fingers. Vasomotor symptoms were almost universally relieved. Relief from pain and increased motion of the joints usually was achieved in a matter of minutes, occasionally in a matter of hours and rarely in a matter of days. All patients received benefit from this treatment. The number of cases, the degree of improvement and its duration was, however, not discussed. Muether[51] treated nine cases of rheumatoid arthritis with daily subcutaneous injections of histamine. A dose of 0.1 mg. was given initially and increased by 0.1 mg. until the reaction level was reached. Seven cases were improved both objectively with increased motion and usually relief of pain, and subjectively with a sense of warmth of the extremities and a sense of well being. Two cases showed objective improvement but would not continue therapy because of a lack of subjective improvement. Only one patient had an adequate follow-up. She experienced immediate and marked relief from stiffness and has found that cessation of the daily maintenance dose is followed by a return of stiffness which is promptly relieved, however, by reinstitution of the daily maintainance therapy.

Lately, Kestler[52] reported on a large series of cases of a great variety of skeletal diseases which he treated with histamine. The majority were

Table 4. *Results of Treatment*

Objectively symptom free	13	
Objectively markedly improved	20	57 per cent
Objectively improved	38	84 per cent
Objectively slightly improved	33	90 per cent
Subjectively improved	8	
Subjectively or objectively not improved	10	
Worse	2	
Total	124	

treated with iontophoresis using an area twice as large as the area involved by the disease. Intravenous infusions of from 0.36 to 0.72 mg. of histamine were given in 250 cc. of saline solution three times a week for three weeks in the remaining cases. He believes that the dose of 0.72 mg. should never be exceeded but gives no reason for this opinion. There were 226 patients treated by iontophoresis and eighty-eight patients by intravenous infusion. The tabulation of these results is too comprehensive to reproduce here but have been summarized to form table 5.

Table 5. *Results of treatment*

Method	No. Cases	Immediate	Excellent	Fair	Failure	Recurrence
Iontophoresis	226	36	141	35	14	39
Per cent	100	16	63	15	6	17
Intravenous	88		40	30	18	24
Per cent	100		45	35	20	27

It seems apparent that this form of therapy offers significant enough results to warrant further investigation, especially because, even with the newer drugs, therapy for this group of diseases is far from adequate.

VASCULAR DISEASE

Aring and Merritt[53] attempted some time ago to set up criteria for the differential diagnosis of cerebral hemorrhage and cerebral thrombosis. In ninety-six patients with verified thrombosis they found that 64 per cent survived for a period of only two weeks, and that 84 per cent survived for only two months. Table six shows their ratios of the various findings in these conditions.

Table 6. *Ratio of Findings*

	Hemorrhage Per cent	Thrombosis Per cent
Spinal fluid pressure over 400 mm.	20	0
Grossly bloody spinal fluid	49	1
Spinal fluid pressure over 300 mm.	14	1
Severe headache	10	1
Progression of signs	9	1
Stiff neck	8	1
Vomiting	8	1
Cheyne-Stokes respiration	5	1
White blood count over 12,000	5	1
Quadriplegia	4	1
Coma	2	1
Clear spinal fluid	1	4

Since Weiss et al.[31] demonstrated the extreme sensitivity of the cerebral blood vessels to intravenous histamine without distress to the patient or vasodilatation of the viscera, Furmanski[54] reasoned that since any cerebrovascular accident causes anoxia and, unless the original or collateral circulation is soon established, death of tissue will ensue. Therefore he felt that intravenous histamine should be of value, but that its use was contraindicated in asthma, hemorrhage, brain tumor or in the presence of an increased intracranial pressure since histamine will produce this phenomenon. Since the cutaneous vessels of the face are less sensitive to histamine than the cerebral vessels, facial flush was used as an index of the effectiveness of therapy.

The following procedure was used. Brain tumor was excluded, and a tap was done if no papilledema was present. If no gross blood was present and the pressure was less than 200 mm., histamine was given. If the fluid was clear and the pressure between 200 and 300 mm. clinical judgement was exercised and histamine, if given, was done cautiously. Initially 2.0 mg. was given over a four hour period. Then an infusion of 1.0 mg. in 500 cc. of saline solution was run in over a two hour period. This was given three times a day until improvement had been maintained for several days. The infusions were then decreased to twice and then once daily, and this was continued for a week. With little or no change the infusions were given three times a day for two weeks before therapy was discontinued. Nicotinic acid in doses of 100 mg. was given four times a day between infusions for added vasodilatation.

The patients were divided into three groups depending on the response. Group 1 showed improvement in all affected fields with return of appreciable function. Group 2 showed improvement in some fields but not in all; i. e., sensory but no motor improvement or vice versa. Group 3 showed no apparent change. Twenty-five cases were studied and only one patient died. In this case the illness was complicated by uremia and pneumonia. Table 7 illustrates the results of therapy.

Table 7. *Results of Therapy*

Day of Illness	Total cases	Group 1.	Group 2.	Group 3.
1	11	9	1	1
2	4	4	0	0
3	8	6	2	0
5	1	1	0	0
7	1	0	0	1

Mufson[55] has employed a new technic in the use of histamine. In obliterative diseases of the peripheral vessels he used 0.5 to 1.0 mg. of histamine in 500 cc. of saline solution and gave the infusion into the femoral artery once or twice a week. This was given at a rate of two to five drops per heart beat under positive pressure which was regulated so that the drip only occurred during diastole. Erythema of the thigh results. If the infusion is given too rapidly the histamine will enter the general circulation and dilatation of the healthy vessels, which are more responsive to histamine, will actually give a decreased blood flow to the leg. This may occur to such a degree that cyanosis or even gangrene will ensue. The infusions were given weekly until a walking tolerance of ten blocks was gained, and then monthly until this tolerance had reached eighteen to twenty blocks. Further treatments were given only with remissions. These were considered to be good results. A six to ten block tolerance with maintenance of a plateau was a good result. Little or

no response after six infusions was considered to be a poor response. Sleep tolerance was defined as the number of hours a patient can lie horizontally without awakening with pain in the calf muscles necessitating arising to obtain relief. It was noted that fear, injury or anything that will produce a vasospasm will likely offset the effect gained by treatment. The effects of therapy are summarized in table 8.

Table 8. *Effects of Therapy*

Results	Walking Tolerance Per cent	Sleep Tolerance Per cent
Very Good	51	100
Good	33	0
Poor	16	0

ALLERGIC DISEASE

Histamine has long been used in an attempt to desensitize patients in whom various dermatoses, rhinitis and asthma were present. The underlying thought behind this is that histamine is produced by the antigen-antibody union, and is the substance which locally or systemically is responsible for the tissue response. Farmer[56] showed that this was feasible by "desensitizing" guinea pigs nonspecifically with histamine after they had been sensitized with specific allergens. Whether or not this nonspecific "desensitization" merely represents an increased tolerance to histamine is of course still open to question. There have been numerous reports in the literature on the nonspecific use of histamine in allergic diseases; and various methods were used in administering the drug. It is beyond the scope of this paper to discuss these reports individually, however, table 9 summarizes them sufficiently to show the general results with this form of therapy. The allergic reactions to insulin as described by Roth[57] are not included in the table, but this allergy responds excellently to histamine. In general it can be seen from the table that the best results are obtained in urticaria and perennial allergic rhinitis, fair results in seasonal allergic rhinitis and contact dermatitis, and poor results in asthma and atopic dermatitis.

DIAGNOSTIC PROCEDURES

Histamine has been used also under certain circumstances as a diagnostic agent. Loesser[65] in 1938 described the use of the histamine flare as an index of peripheral nerve function. Histamine was injected intradermally at distances of one to three inches over the area to be tested. Tolnick and Beck[66] stated that there must be a flare to consider the test positive. They noted that in neurotmesis (severance of the nerve), the flare is abolished. In axonotmesis (damage of the nerve to complete degeneration with supporting structure intact so that regeneration is spontaneous), the flare is present until wallerian degeneration occurs, and then becomes positive as regeneration occurs. In neuropraxia (short lived paralysis with no evidence of degeneration of the nerve), the flare is present continually. During the last war the test was found useful in differentiating hysteria from organic injury. From the nature of the test it is evident that the blood supply to the area being tested must not be disturbed.

The histamine test for pheochromocytoma is better known. Roth and Kvale[67] in an attempt to control the hypertension of a patient during surgery for pheochromocytoma noticed the opposite effect from that expected. In studies on normal patients, hypertensives and hyperreactors to the cold pressor test, no differences were noted between the fluctuations following the cold-pressor test and 0.05 mg. of histamine in 0.5 cc. of saline solution given intravenously. In cases which were later proven to have a pheochromocytoma the histamine test induced an attack. The criteria for a positive test is a rise of 100 mm. of mercury or more higher with the histamine test than with the cold-pressor test. The validity of the test has been subsequently confirmed in other cases.[68]

Another diagnostic use of histamine is the test for gastric acidity. Since histamine is the strongest known stimulant of acid secretion by the gastric mucosa, it must be employed without response before a diagnosis of achlorhydria may be made.

DISCUSSION

Some interesting theoretical considerations were propounded by Williams[69] when he proposed the existence of what he calls the intrinsic allergy syndrome. This consists of four division: (1)

Table 9. *Summary of Results*

Disease	Author	Mode of Treatment	Number Cases	Excellent	Good	Fair	Poor	Failure
Urticaria	Alexander & Elliott[58]	Intravenous	14	11	3	0	0	0
	Porch[59]	Subcutaneous	53	40	11	0	0	2
	Sheldon[60] et al.	Subcutaneous	3	2	0	0	0	1
	McLaurin[23]	Subcutaneous Hapamine	12	—	12	0	0	0
	Smith[61]	Subcut. and Intravenous	11	3	5	3	0	0
Contact & Atopic Dermatis	Sheldon[60] et al.	Subcutaneous	19	7	2	3	1	6
	Smith[61]	Subcutaneous Intravenous	11	0	1	2	0	8
Perennial and Allergic Rhinitis	Farmer & Kaufman[62]	Subcutaneous	45	—	25	10	6	0
	McLaurin[23]	Subcutaneous Hapamine	41	39	2	0	0	0
Seasonal and Allergic Rhinitis	Farmer & Kaufman[62]	Subcutaneous	87	—	37	28	—	22
	Farmer[63]	Subcutaneous	48	21	—	12	—	15
Asthma & Asthma with Rhinitis	Sheldon[60] et al.	Subcutaneous	10	4	0	1	0	5
	Farmer[64]	Subcutaneous	18	—	5	6	3	4

vasomotor rhinitis, (2) Meniere's syndrome, (3) myalgia and (4) the vasodilating pain syndrome. He noticed that clinically various combinations of these occur together frequently. In the patients observed there was no correlation between the histamine skin test and the results of histamine therapy.

Histamine has been used in numerous disease entities, however, from the foregoing discussions one fact is immediately apparent: the underlying common denominator is the vascular system. Regardless of whether the disturbance is on an allergic basis or not, the changes which one recognizes as the various disease entities are merely end-organ responses in various systems of the body as a result of localized or generalized vascular disturbance. Atkinson[28] has shown the interrelationships of Meniere's syndrome and migraine; and earlier it was stated that histamine cephalalgia and the vasodilator headaches of Wolff might fit into the scheme of primary vasodilatory and primary vasoconstricting syndromes which Atkinson has postulated. If one were to broaden this hypothesis to include the body as a whole, the localized end-organ responses which are known as allergic rhinitis, asthma and allergic dermatosis, including urticaria, would further substantiate the contention that these so called disease entities are merely different localized responses to common stimulus.

Since histamine will stimulate secretion of epinephrine from the adrenal medulla,[67] and since epinephrine will stimulate secretion of adrenal cortical hormones as evidenced by the eosinopenia following its administration,[70] it can be assumed that histamine plays a significant role under certain circumstances in initiating the stress reaction as described by Selye.[71] If this is so and if the underlying pathologic physiology in various clinical syndromes is a failure of the body to rapidly destroy the histamine liberated from the cells to the general circulation, then the potentialities of histamine as an investigative and a therapeutic agent in the diseases of stress and adaptation are virtually unlimited.

SUMMARY AND CONCLUSIONS

1. The development and use of histamine as a therapuetic agent was discussed.

2. Histamine, especially by intravenous infusion, is a relatively safe drug. This has been demonstrated by Horton[72] who used this method in 1,272 consecutive cases without any untoward effect, and without encountering a single case of acute histamine shock.

3. The use of histamine in the treatment of various diseases and syndromes shows that: (a) it is the treatment of choice in histamine cephalalgia; (b) it is the only treatment for migraine which prevents further attacks of the headache and, therefore, may be considered the treatment of choice in this disease also; (c) it is at least equally as effective in Meniere's syndrome and chronic urticaria as any other form of therapy; (d) it has a definite place in the therapy of various allergic disorders, and (e) it appears to have some benefit in certain diseases of the skeletal system, multiple sclerosis, peripheral vascular disease and cerebral vascular disease.

4. The diagnostic use of histamine in peripheral nerve injury, pheochromocytoma, and determination of gastric acidity was discussed.

5. Further extensive use of histamine in these diseases is indicated, not only in those in which excellent results are achieved by its use but, especially, in those diseases for which so little can be done at the present time, and in which histamine has been shown to be of some probable benefit. It is entirely possible that further studies with histamine in these chronic diseases may well open the door to significant advances in the field of therapuetics.

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PROPER MEDICAL MANAGEMENT OF OLDER WORKER NECESSARY

With proper medical management by industry, employees over 40 years of age can be satisfactorily employed, in the opinion of Dr. Rufus B. Crain, medical director of the Kodak Office and Camera Works, Eastman Kodak Company, Rochester, N. Y.

In an article in the current *Archives of Industrial Hygiene and Occupational Medicine*, published by the American Medical Association, Dr. Crain told how his company manages its 30,000 workers, 39 per cent of whom are over 40.

One of the most essential elements for proper management of the older employee is selective job placement, according to Dr. Crain. If this is correctly done, employees with such impairments as heart and blood vessel diseases, diabetes, arthritis, arrested pulmonary tuberculosis, amputations and defective hearing and vision will prove as efficient as employees without such afflictions.

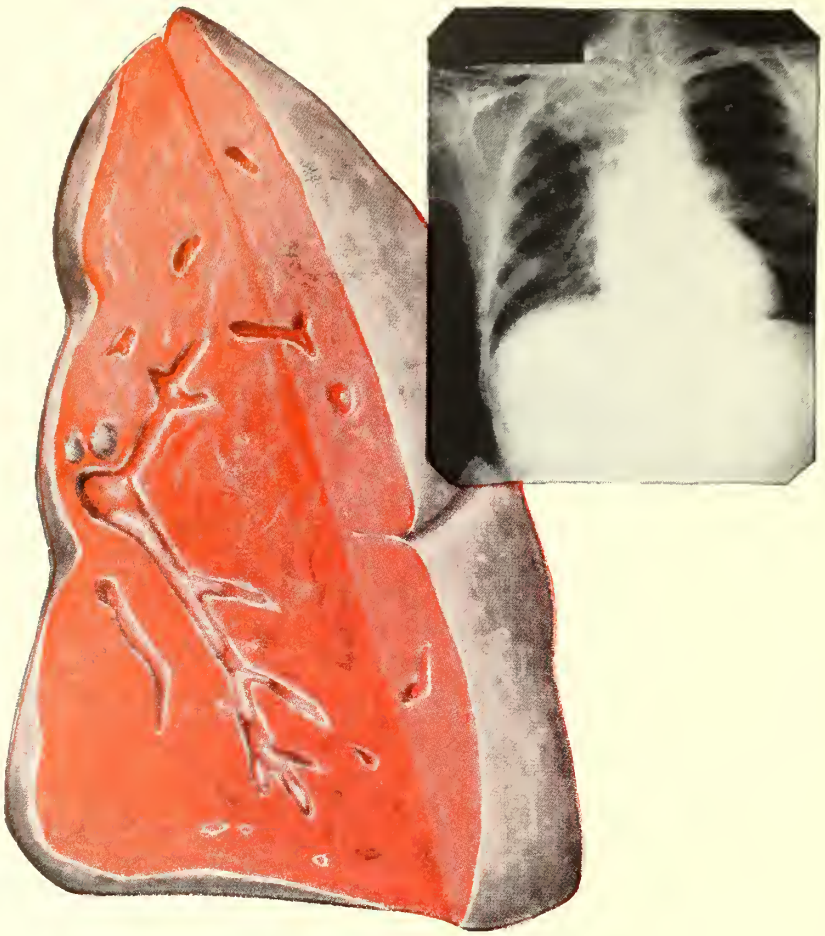
The article pointed out that the factor of age was not a leading problem in regard to industrial injuries. This was also attributed to the careful placement of the older employees.

Nutritional and psychiatric guidance of employees has proved successful in obtaining the optimum of good health and work capacity, Dr. Crain stated.

The company's nutrition department provides an educational program for the employees, counsels the managers of the in-plant cafeterias and service dining rooms, and provides an administrative course in industrial nutrition.

"Many complaints about work, on further investigation, turned out to be emotional disturbances inherent in home situations and upbringing, perhaps aggravated by the pressure of production," Dr. Crain said, in discussing the importance of a psychiatric and psychologic approach to employee problems.

He also stressed the importance of preparing the older worker for retirement. Older workers must be taught how to prepare for and live through the years of retirement, he said.



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Graves, F. B., and Ball, W. O.:
J. Pediat. 39:155 (Aug.) 1951

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Furunculosis • Impetigo
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Case Reports

GASTROINTESTINAL MANIFESTATIONS IN CHRONIC RESPIRATORY DISORDERS

STANLEY L. GOLDMAN, M.D.
KANSAS CITY

ALLERGIC UPPER respiratory disease may cause nausea, vomiting, eructations and bloating with absolutely no physical, laboratory or x-ray evidence of gastrointestinal disease. It is not uncommon to characterize patients suffering with upper abdominal symptoms as psychosomatic because of failure to secure positive laboratory and roentgenologic findings. The patient with belching and bloating or nausea and vomiting may have received a thorough history and physical examination, analysis of urine, blood, gastric juice and stool, plus gall bladder and gastrointestinal x-rays. If these are reported negative, a diagnosis of psychoneurosis is frequently made. With increased interest in "psychosomatic medicine," this is not surprising, since many patients with various types of organic disease also present positive characteristics of psychoneurosis such as cold sweating hands, undue anxiety and tension headache. In this age of high tension, a large proportion of the population develop some psychoneurotic symptoms. Such symptoms as nausea and vomiting or bloating and belching are best demonstrated by the following cases.

REPORT OF CASES

Case 1. W. C., a 34 year old printer, complained of weight loss, poor appetite, nausea and vomiting in the morning for four months. Further history revealed a stuffy nose, a chronic cough on arising with slight expectoration and sinusitis with occasional headache. The family history was negative as to gastrointestinal, allergic and other diseases. Physical examination revealed a thin male, appearing chronically ill, with evidence of recent weight loss, pale boggy nasal membranes, thick mucoid postnasal drip and upper abdominal tenderness.

Roentgen examination of the intestinal tract, as well as blood count, sedimentation rate and urinalysis were negative. An allergy work-up by scratch and interdermal tests showed multiple sensitivities to foods and inhalants. A few days after beginning treatment, which consisted of avoidance of some of the offending allergens and hyposensitization to others, he felt considerably better. His symptoms disappeared in the following order: vomiting, nausea, anorexia, cough and stuffy nose. Now, after seven months, the only times he notes even the slightest cough has been during bowling when breathing chalk dust, which is a direct irritant.

From the Medical Department, Menorah Hospital Medical Center, and Allergy Clinic, Medical Department, Kansas City General Hospital No. 1, Kansas City.

Another case illustrates a different symptom complex on a similar basis.

Case 2. J. M., a 46 year old tavern owner, complained of belching and pain in the right upper quadrant of the abdomen. This pain occurred usually in the early morning hours. He also coughed in the morning with slight expectoration. There was no nausea or other gastrointestinal symptoms. Physical examination showed a pale boggy nasal membrane, postnasal drip and a few course rales over the chest and a tympanitic note over the upper abdomen. The blood count, urinalysis, sedimentation test and intestinal x-rays were normal. An allergy work-up revealed a marked inhalant sensitivity. With avoidance and hyposensitization therapy, the cough rapidly disappeared and coincidentally the belching and bloating also stopped.

These cases could have been passed by with a diagnosis of functional disease. With awareness of the role of the upper respiratory disease and treating it as such, although not a primary complaint, relief was achieved. In each example, the entire chain of events started with the increased postnasal secretion. This observation in allergic upper respiratory disease is well known.[2]

In the first instance, the mucus was swallowed during the night and the vomiting occurred as a reaction of the body to rid itself of the noxious substance. The dislike for breakfast and nausea were different degrees of the same reaction. These patients frequently complained of bad breath and taste in the morning. This may be due to partial digestion of mucus.

In the second instance, the postnasal drip again was found responsible for the entire series of events. Here, however, instead of being swallowed, the mucus remained in the nasopharynx, initiating the swallowing reflex. This irritation started the act of air swallowing and hyperventilation. Such cases are described excellently by Rice.[1]

SUMMARY

Two cases with gastrointestinal symptoms due to increased postnasal secretion are presented and discussed. In each case the laboratory and roentgen work-up revealed no abnormalities, and the physical examination showed only characteristics of allergic respiratory disease. Treatment using allergic methods gave quick relief from the intestinal disturbances.

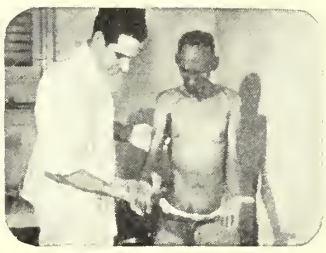
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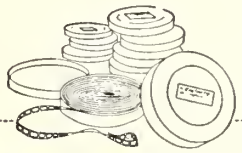


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PRESIDENT'S PAGE

As the date of the 94th Annual Session approaches, it seems to me that we should do well to have in mind the public responsibility which the Association has long recognized that it bears toward the people of Missouri. In a sense, the House of Delegates is like a legislature. The decisions it makes and the policies it adopts have an importance broader than the interests of the medical profession. They affect the health and welfare of all citizens.

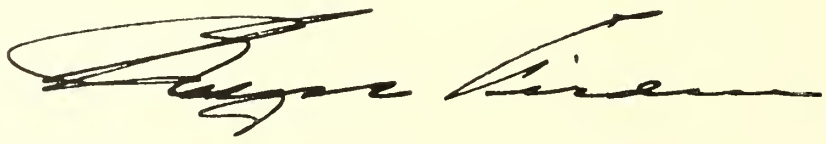


The bedrock of the public policy is the six point program adopted by the Association some years ago which continues to be the best definition of the public service which the Missouri State Medical Association renders.

I should like briefly to summarize this program. It includes work to foster development of hospital and diagnostic facilities in local communities—sponsorship and support of nonprofit voluntary health insurance plans—cooperation to extend the public health program of the state—effort to obtain improved facilities and more adequate staffs in state institutions—work to aid rural communities in obtaining needed doctors—advocacy of establishment of a four year University of Missouri medical school on a sound and realistic basis.

In this brief space it is not possible to consider the elements of this program in detail. Simply to name them, however, should be a valuable reminder to each that through the Association we are participants in a broad program of public service to the people of Missouri. As individual members of a democratic public service organization, each of us has a personal responsibility to be informed about the problems before us and to contribute his thought and effort to their solution.

It is my hope that we shall all have well in mind this public responsibility of the Missouri State Medical Association when we meet in St. Louis to set our course for the year ahead.



Editorials

ANNUAL SESSION

March 30 through April 2 are the dates of the Ninety-fourth Annual Session of the Missouri State Medical Association, which promises to be an excellent session. All meetings will be held in Hotel Jefferson, St. Louis, and the session will open, as is customary, with a meeting of the House of Delegates on Sunday afternoon, March 30, at 2:00 p.m. Scientific sessions will open Monday morning, March 31. The scientific program, the scientific exhibits and the technical exhibits are listed in this issue of THE JOURNAL. Several medical and allied organizations will meet immediately preceding or concurrently with the Association meeting. Programs of several of these meetings appear in this issue.

E. M. Hammes, M.D., St. Paul, Minnesota, Chairman, Medical Testimony Committee of the Minnesota State Medical Association, will be the speaker at a final session of a meeting on March 29 of the Missouri Society of Pathologists, St. Louis Pathological Society and the South Central Region of the College of American Pathologists. Dr. Hammes will speak on "The Minnesota Plan for the Control of Medical Testimony." The session will be held in the Auditorium of the St. Louis Medical Society at 8:30 p.m. on Saturday, March 29, and the meeting will be open to all physicians, lawyers and persons interested in medical testimony.

Louis H. Bauer, M.D., Hempstead, New York, President-Elect of the American Medical Association, will speak on "Problems Facing the Medical Profession" at the Banquet in Honor of Past Presidents. The banquet will be held on Tuesday evening, April 1, instead of Monday evening as it has in recent years. C. Edgar Virden, M.D., Kansas City, President, Missouri State Medical Association, will preside, and J. William Thompson, M.D., St. Louis, President-Elect, will be installed as President.

The General Committee on Arrangements for the Annual Session, composed of Councilors, is Drs. Armand D. Fries, St. Louis; John O'Connell, Overland, and W. F. Francka, Hannibal.

St. Louis committees for the Annual Session follow:

Executive Committee: Drs. R. O. Muether, Chairman; Jerome E. Cook, and Norton J. Eversoll.

Arrangements: Drs. Carl F. Vohs, Chairman; E. P. Buddy, Curtis H. Lohr, L. R. Sante, and Llewellyn Sale.

Publicity: Drs. Harry K. Purcell, Chairman; Henry C. Allen, and Arthur Neilson.

Entertainment: Drs. Victor E. Scherman, Chairman; Emil A. Burst, Douglas A. Ries, and William A. McGuire.

Hotels: Drs. B. J. McMahon, Chairman; David N. Kerr, and Carl J. Heifetz.

Registration: Drs. A. N. Arneson, Chairman; Eugene M. Bricker, E. C. Funsch, and Charles E. Martin.

Past President's Banquet: Drs. Maxwell Fineberg, Chairman; Wendell G. Scott, James P. Murphy, and Stanley F. Hampton.

Reception: Drs. C. E. Hyndman, Chairman; L. R. Sante, Carl F. Vohs, C. E. Burford, Robert Mueller, Llewellyn Sale, E. P. Buddy, William E. Leighton, E. C. Ernst, Frederick E. Woodruff, Joseph C. Peden, Alphonse McMahon, Curtis H. Lohr, Neil S. Moore, John C. Morfit, J. William Thompson, Robert A. Moore, and C. Rollins Hanlon.

Scientific Exhibits: Drs. Louis H. Kohler, Chairman; J. E. Von Kaenel, Bernard L. Sinner, Paul F. Max, and Arthur R. Dalton.

Attendance: Drs. Leo V. Mulligan, Chairman; Daniel L. Sexton, Charles R. Doyle, Leo J. Hartnett, and Eugene V. Henschel.

MISSOURI HEALTH COUNCIL HOLDS CONFERENCE

The midwinter conference of the Missouri Health Council was held at the Governor Hotel, Jefferson City, on January 23. Approximately seventy-five persons representing the State Council, various County Health Councils, the Missouri Division of Health and several county and district health units were in attendance.

The morning session consisted of a panel discussion by three health educators from the Missouri Division of Health who are, at present, serving three of Missouri's district health units. They discussed local health councils from the standpoint of the many difficulties encountered in organizing and activating these voluntary health promotion vehicles.

The afternoon program included interesting reports on two county health council projects. Miller County Health Council presented a review of a nutrition project being carried on in a part of that county to discover what nutrition problems exist among a good sampling of people over the county. The Greene County Health Council reported on a diabetes survey sponsored by that Council on a large sampling of the residents of Greene County. These reports were concrete evidence of the potential usefulness of health councils.

Organization and Economics

NEWS NOTES

The St. Louis City Hospital No. 1 Alumni Association will hold its annual dinner meeting at the Starlight Roof, Chase Hotel, St. Louis, on March 31, in conjunction with the Annual Session of the Missouri State Medical Association. A social hour at 6:30 p. m. will precede the dinner at 7:30 p. m. Those desiring to attend are asked to contact Don C. Weir, M.D., Secretary, 634 N. Grand Avenue, St. Louis.

A joint meeting of the St. Louis Dermatology Society and the Kansas City Dermatology Society will be held on March 30 at the Barnard Free Skin and Cancer Hospital, Theresa and Washington Avenues, St. Louis. The program will consist of presentation of cases from 1:00 to 3:00 p. m., followed by discussion with adjournment at 5:00 p. m. All physicians are invited to attend.

The following physicians have been elected fellows of the recently formed American Academy of Obstetrics and Gynecology; Drs. A. N. Arneson, Robert J. Crossen, E. Lee Dorsett, Paul F. Fletcher, Joseph A. Hardy, Jr., Leo J. Hartnett, Joseph M. Krebs, Laurence M. Riordan, Melvin A. Roblee and William C. Stude, St. Louis; Harold L. Gainey, Buford G. Hamilton, J. Milton Singleton and Joseph C. Webster, Kansas City.

Joseph Grindon, M.D., St. Louis, will address the General Practitioners' Study Club of Greater St. Louis on March 19 on "Discussion of the Common Skin Diseases and Their Treatment."

The annual meeting of the American Goiter Association will be held May 1, 2 and 3, at Hotel Chase, St. Louis. All physicians are invited to attend the session.

MUSINGS OF THE FIELD SECRETARY

The statement that the American people are the "meetingest" people on earth is seldom challenged. The one group that probably adds most to that label is the medical profession. Doctors meet, and meet, and then they have another meeting. Frequently one hears a doctor lamenting his meeting schedule which may have his next ten evenings fully catalogued. The majority of these meetings apparently are medical sessions at which doctors rub elbows only with other doctors. Now, of course, it is readily conceded that doctors gain much from their interprofessional get-togethers, not only from scientific programs in group meetings but from the opportunity afforded to know each other. However, maybe a bit of variety in the programs and personnel invited to attend some of these meetings could possibly reduce the allergy that doctors have for too many meetings.

Three illustrations of successful efforts to introduce such variety are offered by the Phelps-Crawford-Dent-Pulaski County Medical Society and the Chariton-Macon-Monroe-Randolph County Medical Society. The former Society, at its October meeting, invited members' wives and all of the dentists and their wives from the four counties to a dinner meeting get-together. The formal program was presented by William Crowdus, St. Louis attorney, who discussed "The Legal Aspects of the Practice of Medicine and Dentistry." The latter Society held a similar invitational meeting in Moberly last October with wives of the members, dentists and their wives and lawyers and their wives of the four counties as guests. The formal program in this case was presented by an F.B.I. agent and a St. Louis pathologist.

At its annual dinner meeting in December, the Chariton-Macon-Monroe-Randolph Society counted 103 persons in attendance. The members of the Society brought their wives and a specified number of invited lay guests. Oliver Field of the American Medical Association gave an interesting talk and demonstration relating to "Medical Mechanical Quackery." This annual affair is so well established now that someone will need raise a lot of fuss this coming December or dinner jackets may be the "uniform of the day."

The reports on these three meetings were quite enthusiastic and plans by both societies are underway for more of the same meetings this year.

Kansas City Southwest Clinical Society Offers Merit Awards

The Kansas City Southwest Clinical Society announces its 1952 merit awards for residents or interns. The papers submitted must be original work of the resident or intern compiled during his service in the hospital, including experimental laboratory work. The contest is open to physicians who are graduates of approved medical schools and who are members of their respective county and state medical societies.

The awards are: first award, $300.00; second, $200.00, and third, $100.00.

Applications for participation should be made to the Executive Office, Kansas City Southwest Clinical Society, 630 Shukert Bldg., Kansas City 6, on or before April 1, 1952.

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1. Hutcheson, J. M.: Management of Cardiac Failure. *Virginia Med. Monthly*, 74:458, Oct., 1947.
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MISSOURI STATE MEDICAL ASSOCIATION

The 94th Annual Session of the Missouri State Medical Association will be held in Hotel Jefferson, St. Louis, March 30, 31, April 1, 2, 1952.

TIME AND PLACE OF MEETINGS

Sunday, March 30

12:00 noon Registration. Mezzanine Floor. Hotel Jefferson.
2:00 p. m. House of Delegates. Crystal Room.

Monday, March 31

8:00 a. m. Registration. Mezzanine Floor.
8:30 a. m. Motion pictures. Gold Room.
9:00 a. m. Scientific Session. Gold Room.
10:00 a. m. Intermission to View Exhibits.
10:30 a. m. Symposia. Gold Room and Crystal Room.
12:00 noon Round Table Luncheon. Gold Room.
1:30 p. m. Motion pictures. Gold Room.
2:00 p. m. Scientific Session. Gold Room.
3:30 p. m. Intermission to View Exhibits.
4:00 p. m. House of Delegates. Crystal Room.

Tuesday, April 1

8:00 a. m. Registration. Mezzanine Floor.
8:30 a. m. Motion picture. Gold Room.
9:00 a. m. Scientific Session. Gold Room.
10:00 a. m. Intermission to View Exhibits.
10:30 a. m. Symposia. Gold Room and Crystal Room.
12:00 noon Round Table Luncheon. Gold Room.
12:15 p. m. Missouri Medical Alumni Luncheon.
1:30 p. m. Motion pictures. Gold Room.
2:00 p. m. Scientific Session. Gold Room.
3:00 p. m. Intermission to View Exhibits.
3:30 p. m. Scientific Session. Gold Room.
7:30 p. m. Annual Banquet. Gold Room.

Wednesday, April 2

8:00 a. m. Registration. Mezzanine Floor.
8:30 a. m. Motion pictures. Gold Room.
9:00 a. m. Scientific Session. Gold Room.
10:00 a. m. Intermission to View Exhibits.
10:30 a. m. Scientific Session. Gold Room.
1:30 p. m. Scientific Session. Gold Room.
1:30 p. m. House of Delegates. Crystal Room.

SCIENTIFIC PROGRAM

Monday, March 31, 1952, 8:30 a. m., Gold Room

C. Edgar Virden, M.D., Kansas City, presiding

8:30 a. m. Motion pictures.
9:00 a. m. Headache and Its Treatment, Robert E. Ryan, M.D., St. Louis.

The physiologic basis of head pain will be presented. The history taking and examination of the headache patient are then discussed. Several types of headache are presented by giving the symptology and treatment. Among those discussed are: migraine, histaminic ecphalgia, sinusitis, myalgia, tension headache and psychogenic headache.

9:20 a. m. Discussion:
Leslie C. Drews, M.D., St. Louis.
John J. Hammond, M.D., St. Louis.
9:30 a. m. Rehabilitation of the Chronic Arthritic Patient, C. S. Gillmor, M.D., Kansas City.

Rehabilitation of the chronic rheumatoid arthritic patient today is composed of these planned procedures: 1. Mental and physical rest, medicinal treatment and physical therapy. 2. Gold therapy added to the routine of

Plan 1 if progress is not satisfactory. 3. Hormonal therapy considered if improvement has not been obtained through Plans 1 and 2. Orthopedic surgery, when indicated, is used to help restore the patient to health and a more useful life. Vocational rehabilitation is important in reestablishing the patient in a gainful occupation.

9:50 a. m. Discussion:
J. Albert Key, M.D., St. Louis.
Garrett Pipkin, M.D., Kansas City.

Intermission to View Exhibits.

Symposium on Medicine. Gold Room

Anthony B. Day, M.D., St. Louis, presiding

10:30 a. m. Why Some People Are So Terribly Nervous, W. C. Alvarez, M.D., Chicago.

Some persons are nervous because of overwork, strain, worry, insomnia or sorrow. Usually they can be cured quickly with some rest and psychotherapy. Other persons are not only nervous but will have somewhat psychotic symptoms such as pathologic worries, compulsions, unreasonable phobias and difficulties in adjustment. Many suffer from severe headache, jittery spells, strange pains, nausea, vomiting, diarrhea, severe insomnia, palpitation, dizzy spells and bloating spells.

The remarkable fact about these people is that most of them come from families in which there are psychotic or alcoholic relatives. Their symptoms are their small share of the family nervous defect. This is a most useful idea in making the diagnosis in queer and difficult cases.

11:00 a. m. Evaluation of Antibiotic Therapy, W. Barry Wood, M.D., St. Louis.

A formal discussion will be presented of the principal uses of modern antibiotics, including penicillin, streptomycin, terramycin, aureomycin and chloromycetin. The pharmacology, toxicology and methods of administration of each of these agents will be reviewed. Comments will also be included concerning the choice of antibiotics in the treatment of specific infections.

11:20 a. m. Differential Diagnosis of Chest Pain, Maxwell G. Berry, M.D., Kansas City.
11:40 a. m. Discussion.

Symposium on Obstetrics. Crystal Room

E. Lee Dorsett, M.D., St. Louis, presiding

10:30 a. m. The Management of Prolonged Labor, James E. Keller, M.D., Kansas City.

Gordon, in a recent article, points out that the period of greatest reduction in maternal mortality came with the advent of those who preached conservatism in the practice of obstetrics. He also shows that the remainder in maternal mortality is due to two factors, *i.e.*, hemorrhage and infection, and that these in the majority of cases follow prolonged labor. In the light of this the management of prolonged labor must be scrutinized carefully from time to time especially in view of the fact that proponents of more radical forms of management are increasing in recent years.

The conservative approach to the problem consists of supportive treatment for mother and baby during the first stage of labor, measures to minimize the possibility of infection and hemorrhage, and delivery by the simplest possible method at the proper time. The methods used to gain these ends are amplified, and the results in a group of private patients so treated are presented.

10:50 a. m. Antepartum Uterine Bleeding, Thomas M. Meir, M.D., St. Louis.

A consideration of the causes and methods of managing bleeding that occur in the third trimester of pregnancy will be presented.

11:10 a. m. Postpartum Uterine Bleeding, James Pennoyer, M.D., St. Louis.

Maternal mortality has been strikingly reduced in the United States over the last decade. At present hemorrhage is the leading cause of maternal death and its management constitutes a challenge to the physician.

The real risk is in the third stage, the first hour after delivery of the placenta being the critical one. Postpartum hemorrhage is defined as more than 500 ccs. in the first twenty-four hours after delivery. It may be due to uterine atony, cervical and vaginal lacerations, retention of placental fragments and uncontrollable causes such as a large baby, hydramnios, premature separation of the placenta and placenta praevia. Controllable causes include operative deliveries, anaesthesia, lacerations, prolonged labor, exhaustion and third stage management.

These causes and their management is discussed.

11:40 a. m. Discussion.

Round Table Luncheon. Gold Room

12:00 noon. Alphonse McMahon, M.D., St. Louis, Moderator.

Scientific Session. Gold Room

Kenneth Glover, M.D., Mount Vernon, presiding

1:30 p. m. Motion pictures.

2:00 p. m. Surgical Treatment of Acute and Chronic Hemorrhoids, R. F. Elkins, M.D., Springfield.

The purpose of this paper is to discuss the ambulatory and definitive treatment of acute and chronic, external, internal hemorrhoids.

Definite knowledge of the simplest and yet the most expedient way of treatment acute, symptomatic hemorrhoids as an office procedure is important to both the surgeon and general practitioner. The medical and surgical treatment is given as well as the differential diagnosis of related pathologic conditions.

A comprehensive description of the Fansler technic for the definitive treatment of external, internal hemorrhoids is given and suggestions made for the simplification of preoperative and postoperative care. Slides will be shown of the Fansler technic of a radical hemorrhoidectomy.

2:20 p. m. Discussion:
Frederick B. Campbell, M.D., Kansas City.
Jacob Stolar, M.D., St. Louis.

2:30 p. m. Management of Fractures of the Patella, C. R. Roundtree, M.D., Oklahoma City.

This presentation deals with three types of fractures of the patella: first, simple fracture without displacement; second, extensively comminuted fractures with or without compounding, and third, fractures in which either the upper or lower pole are comminuted and the remaining fragment intact.

No attempt is made to present a large series of cases but rather each type is discussed from the standpoint of treatment and management. The indications for partial or complete patellectomy have not, as yet, been well established. Long range follow-up studies are lacking. The indications for complete and partial patellectomy are discussed. A comparatively long range follow-up is presented.

Discussion: Daniel L. Yancey, M.D., Springfield.

3:00 p. m. Carcinoma of the Cervix, A. N. Arneson, M.D., St. Louis.

Differences in the clinical behavior of cervical cancer are manifested by variations in longevity and in response to irradiation. Recognition of factors associated with specified biologic properties is of value in estimating prognosis and in planning treatment. The natural history of the disease in question forms the basis upon which differences in clinical behavior may be predicted.

Classification according to stage of clinical advance is the most important factor in determining the final result. Correlation of gross architecture with statistical values indicates that certain relationships established between normal tissues of the host and the tumor may affect tendency toward dispersion. Response to irradiation is associated intimately with alterations produced in normal tissues. The presence of infection can alter the result to be expected. Overirradiation is as important in clinical failure as is undertreatment.

Experience in the treatment of cervical cancer at the Barnard Free Skin and Cancer Hospital and at the Barnes Hospital is reviewed. Recent advances in radiotherapy are as significant as those made in surgery. It is essential, however, that even in the early cases, maintenance of superior results for

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All diabetic patients should have a chest X-ray once a year because

THE INCIDENCE OF TUBERCULOSIS AMONG DIABETIC PATIENTS AS COMPARED WITH NON-DIABETIC PATIENTS IS THREE TIMES GREATER IN ADULTS, 13 TIMES GREATER IN CHILDREN OF SCHOOL AGE, 16 TIMES GREATER AMONG ADOLESCENTS.

Theoretically, this increased susceptibility is due to the imperfect epithelialization of the respiratory tract due to the inability of the diseased liver of the diabetic to convert carotene into vitamin A.

Banyai and Cadden, Arch. Int. Med., p. 445-6, 1944.
Foley and Andosca, Med. Cl. North Amer. 28, p, 499-505, March, 1944.

Pathologically Speaking

THE FROG TEST FOR PREGNANCY

WITHIN the past five years, the advantages as to accuracy, speed of performance, and simplicity of technique of the frog test for pregnancy have been recognized in most clinical laboratories.

Accurate diagnosis in the first half of pregnancy occurs in about 95% of cases, but the incidence of false negatives in the latter half of pregnancy increases. To date, only rare false positives have been reported, one presumably related to estrogen therapy in the patient and a few others occuring in patients with jaundice; most investigators report no false positives in large series of cases.

Either the first morning specimen of urine or blood serum obtained in the fasting state is used. It is always preferable to obtain blood from the patient since one may at any time encounter the woman who submits a urine specimen from another individual for purposes of obtaining an opposite report.

Serum and/or urine is injected into the dorsal lymph sac of the ordinary male frog. The subsequent release of sperm by the frog constitutes a positive test for pregnancy. In most cases, the frog will have passed sperm (or they can be obtained via capillary tubing from the cloaca) within two hours following injection; many positive tests show sperm within 30 minutes after injection.

Occasionally a specimen which yields a false negative result in the frog may register positive in the rabbit, and hence it is the practise in many laboratories (including ours) to follow all negative frog tests with a Friedman.

RALPH EMERSON DUNCAN, M. D.
LORAINE E. SCHULTZ, M. D.
ALBERT E. UPSHER, M. D.

radiotherapy necessitates use of all the modern technics of treatment. Advance in knowledge of natural history may establish an improved basis for selecting surgery or radiation as the primary method of treatment in individual patients.

3:20 p. m. Discussion:
E. Kip Robinson, M.D., Kansas City.
Marvin L. Napper, M.D., Springfield.

Intermission to View Exhibits.

4:00 p. m. House of Delegates. Crystal Room.

Tuesday, April 1, 1952, 8:30 a. m., Gold Room

Otto W. Koch, M.D., Clayton, presiding

8:30 a. m. Motion pictures.
9:00 a. m. Thyroid Medication in General Practice, H. J. Brumm, M.D., St. Joseph.

Considerable knowledge about the administration of thyroid substance has been acquired since thyroid extract was first used by Dr. George Murray in 1892. While there is ever increasing use of thyroid medication in general practice, one should be cautioned to use it wisely. The abuse of thyroid medication no doubt outweighs the judicial use of this hormone in everyday medical practice. It is likely that this is due to improper diagnosis, the physician's unawareness of harmful effects and, finally, the common practice of symptomatic treatment without a working diagnosis. While there is no specific yardstick for measuring the exact dosage of thyroid required, it is well established that rather small doses are sufficient in the treatment of hypothyroidism.

The internal secretion of thyroid gland may be decreased greatly by feeding excessive amounts of thyroid substance. Most euthyroid patients are able to acquire tolerance to ingestion of large doses of thyroid. In such instances there is a gradual decrease in the serum protein perceptible-iodine and in the basal metabolic rate. Ingestion of excessive thyroid over a long period of time does not appear to affect the function of the thyroid gland permanently. This depression is reversible and after cessation of thyroid therapy, normal activity of the gland is eventually resumed.

Patients with myxedema rarely require more than 2 grains of thyroid a day to maintain normal metabolic balance. The safe treatment in this condition is to start with small doses such as one fourth grain daily and gradually increase this dosage over a period of three or four weeks, or even longer, so that body metabolism will not be altered too suddenly. Large doses of thyroid are never beneficial. In the euthyroid state the metabolism is not effectively increased and the excess is excreted; large doses in myxedema may be dangerous.

Thyroid hormone is apparently the factor in the absorption of iron sulfate. A hypochromic, normocytic anemia, which is refractory to the administration or iron suggests thyroid deficiency. Trial therapy with small doses of thyroid extract, combined with iron preparations, is entirely justifiable, even though the basal metabolic rate is normal.

There is a common belief that myxedema and hypothyroidism without myxedema are usually associated with obesity. This is an erroneous belief and, furthermore, there is no scientific data to substantiate this conception.

9:20 a. m. Discussion:
Sim F. Beam, M.D., St. Louis.
James H. Danglade, M.D., Kansas City.
9:30 a. m. The Avoidance of Recurrent Hyperthyroidism, A Twenty Year Study, Willard Bartlett, Jr., M.D., St. Louis.

In the past, the results of partial thyroidectomy, improperly labeled "subtotal," has given less than an ideal result in too large a percentage of patients with either diffuse or nodular goiter. In 1932, I concluded that the occurrence of persistent or recurrent hyperthyroidism could be avoided by a much more radical, truly subtotal, thyroidectomy, tissue insufficient to meet the patient's needs being deliberately left. A corollary of such an operation would be the necessity for life long thyroid feeding postoperatively. A case history study has been made of all patients known to have recurrent or persistent hyperthyroidism since 1932 and an evaluation of

the results of this program are set forth, together with a description of the postoperative regime.

9:50 a. m. Discussion:
C. Rollins Hanlon, M.D., St. Louis.
Claude J. Hunt, M.D., Kansas City.
Intermission to View Exhibits.

Symposium on Surgery, Gold Room

Ralph R. Coffey, M.D., Kansas City, presiding

10:30 a. m. The Gallbladder and Duct Problems, R. L. Sanders, M.D., Memphis, Tenn.

This paper presents a consideration of the following problems encountered in the treatment of gallbladder disease:

(1) The so-called "innocent gallstones"; whether there is such entity; what the surgeon's attitude should be toward patients who, at operation for some other disease, are found to have previously unsuspected gallstones, and toward those who are found to have gallstones on roentgen study but have no symptoms referable to the gallbladder.

(2) The damaging effect of long standing gallbladder disease and gallstones on the liver parenchyma.

(3) The proper management of acute cholecystitis, with special reference to immediate or delayed operation.

(4) Indications for opening the common duct.

(5) Stricture of the common duct, with special reference to injury of the duct during cholecystectomy.

(6) The indications for and benefits of choledochoduodenostomy (lantern slide illustrations).

11:00 a. m. The Provision of Adequate and the Avoidance of Excessive Sodium and Potassium Intake in the Surgical Patient, Robert Elman, M.D., St. Louis.

The surgeon can no longer provide for essential water and electrolyte needs by merely ordering 5 per cent glucose in water or 5 per cent glucose in saline. He must recognize variations in the needs of various patients for not only water but, also, sodium as well as potassium. To order insufficient sodium may lead to the dangers of water intoxication. To fail to order potassium may lead to prolonged symptoms of potassium deficiency which among other things includes persistent alkalosis and hypochloremia. On the other hand, excessive sodium may lead to the dangers of pulmonary edema and other serious complications. A simple bedside approach to these problems will be presented based upon balance studies in a series of surgical patients.

11:20 a. m. Nutritional Disturbances Incident to Gastrectomy, William H. Duncan, M.D., Kansas City.

Due to a better understanding of the physiology of the gastrointestinal tract, correlated with proper postoperative care, the patient with a gastrectomy has a 50 per cent better chance of survival than a patient twenty-five years ago. The 50 per cent that do survive also have a much more pleasant existence, maintain their weight better and have a greater feeling of well-being. The loss of the stomach seems a small price to pay for the relief of such distressing symptoms as nausea, vomiting, anemia, weight loss, weakness, anorexia, pain and other distressing symptoms.

With gastrectomy, digestive processes are impaired or lost such as the reservoir function of the stomach and the mechanical breakdown mechanism of food particles so that they are more easily acted upon by the digestive processes of the small and large intestines. The rapidity of the food entering the jejunum in a bulky state places an abnormal load upon the small intestine and even though it has unusual ability of adaptation and compensatory powers, it cannot cope with this extra load placed upon it.

Therefore, there are disturbances of the gastrointestinal tract following major surgical procedure of the stomach such as the "dumping syndrome," bilious vomiting, anemia, weight loss, sweating, flatulence, cramps and all types of manifestations of vitamin deficiencies. Care in evaluating a patient's preoperative status and performing surgery with him in normal

protein, blood, cardiac and vitamin balance will help greatly in alleviating postoperative complication.

Anemia is a frequent complication of gastrectomies and it has been found that the amount of the stomach removed has no constant relationship to the development of or the severity of the anemia. Pernicious anemia is a late rare complication and responds readily to antipernicious therapy. The usual type of anemia following gastrectomy is the iron loss type, a microcytic, hypochromic picture that also responds to proper therapy.

Large amounts of vitamins are destroyed by B Coli organism that are found high in the small intestine and by the neutral pH of the small intestine. Large amounts of vitamins therefore are recommended, especially ascorbic acid and the B complex group.

A nonphysiologic operation is done so that patients must be taught different diatetic habits such as eating smaller amounts and more slowly, masticating food better, cutting down on fluid intake, restricting cold fluids, resting after meals and favoring a high protein and low carbohydrate diet.

In conclusion, it is apparent that major gastric surgical procedures including complete removal of the stomach may be done without fear of disturbing the adequate functioning of the gastrointestinal tract. A certain amount of nutritional disturbance arises following gastric surgery, however, if the symptoms are treated early and adequately, the ordinary patient may be expected to have a normal equilibrium and maintain a reasonably comfortable existence.

11:40 a. m. Discussion.

Symposium on Pediatrics, Crystal Room

H. E. Petersen, M.D., St. Joseph, presiding.

10:30 a. m. Conservative Surgery in the Treatment of Congenital Disease of the Upper Urinary Tracts in Children, D. R. Seabaugh, M.D., Cape Girardeau.

The paper gives a brief historic summary of the development of conservative surgery in the treatment of congenital disease of the urinary tract. It points out that these congenital defects are usually progressive, that best results are obtained when surgery is resorted to early, and a plea is made for an early diagnosis. Nine cases are presented.

10:50 a. m. Treatment of Upper Respiratory Infections in Infants, Joseph C. Jaudon, M.D., St. Louis.

11:10 a. m. Management of Acute Leukemia, Peter G. Danis, M.D., St. Louis.

11:30 a. m. Discussion.

Round Table Luncheon, Gold Room

12:00 noon. M. Pinson Neal, M.D., Columbia, Moderator.

Scientific Session, Gold Room

Rollin H. Smith, M.D., West Plains, presiding

1:30 p. m. Motion pictures.

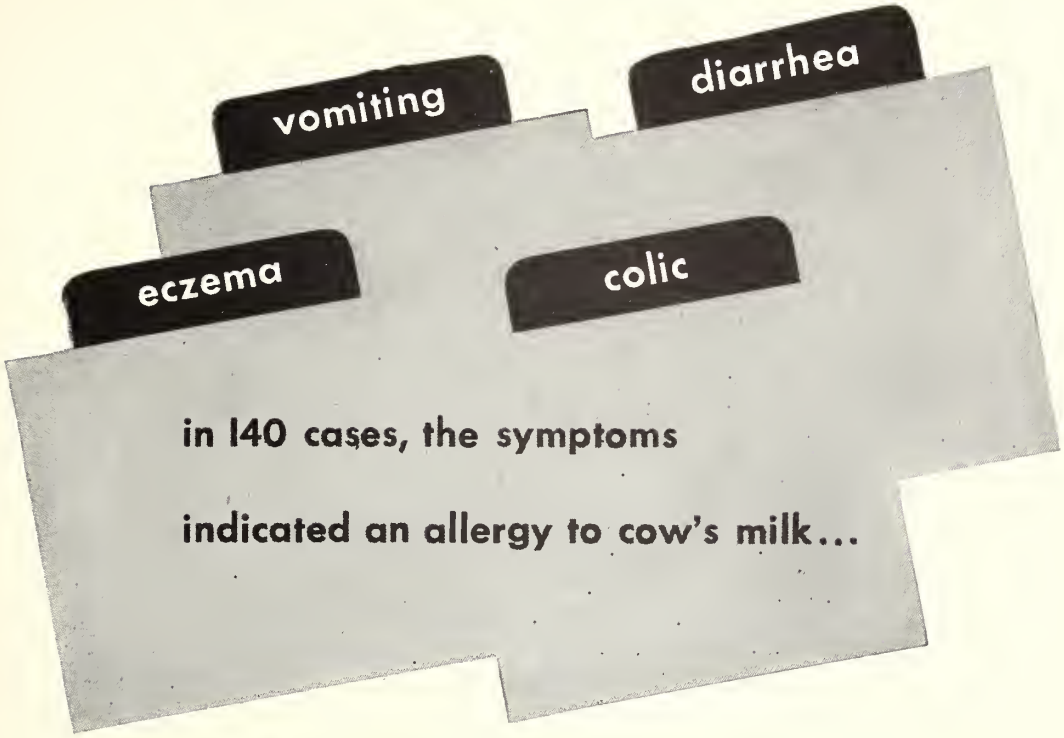
2:00 p. m. Respiratory Allergies, Herbert J. Rinkel, M.D., Kansas City.

Respiratory allergy, to be discussed at this time, includes seasonal hay fever, perennial nasal allergy and bronchial asthma, since these are the most common manifestations of this type of allergy. The paper will present diagnostic methods to determine the etiologic foods and inhalants. The differential diagnosis will evaluate the so-called "cold" and allergic manifestations.

A discussion of therapy is to be given of the method of handling food sensitizations and inhalants. Of particular importance is that of inhalants in which the role of the degree of sensitivity will be discussed in relation to clinical evaluation of the optimum dose in inhalant desensitization will be discussed. A brief résumé is given of the major and minor pollen in the Missouri area.

There also will be a brief discussion of the concomitant effect of foods and inhalant allergy.

An attempt will be made to clarify two of the most important problems in



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*Clein, Norman W.: Cow's Milk Allergy in Infants, Ann. Allergy 9:195 (March-April) 1951.

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the field of respiratory allergy, namely; first, the differential diagnosis of nasal and respiratory infections and allergies in the same locale and, second, the correct method of administration of desensitizing injections.

2:20 p. m. Discussion:
T. Harry Saferstein, M.D., St. Joseph.
William T. K. Bryan, M.D., St. Louis.

2:30 p. m. Dermatologic Manifestations Due to Hypoproteinemia, David B. Morgan, M.D., Kansas City.

Although deficiency of plasma proteins has been known to exist in some skin diseases, especially of chronic nature, this fact has often been overlooked in their treatment.

Some dermatologic conditions due to hypoproteinemia will be discussed.

2:50 p. m. Discussion:
Clinton W. Lane, M.D., St. Louis.
Joseph Grindon, Jr., M.D., St. Louis.

3:00 p. m. Hepatitis: Differential Diagnosis by Laboratory Studies, Hans Popper, M.D., Chicago.

Mere demonstration of the presence of hepatitis (defined as a hepatic injury of clinical significance without, but usually with, jaundice) by clinical observation or laboratory methods does not solve the problem of two clinical important questions:

a. The problem of etiology (mainly the differentiation between surgical jaundice due to tumor, stones and scars, and medical jaundice caused by primary hepatitis or cirrhosis).

b. The problem of prognosis (presence or transition into cirrhosis as an irreparable state).

The application of liver biopsy and of biochemical and serologic tests, some of them actual liver function tests and some of them offering circumstantial evidence as to the state of the liver, in these problems, will be discussed.

With the combined use of histologic and functional methods the following phenomena can be observed: (1) liver cell degeneration, (2) cholestasis, (3) inflammation, (4) dirrhotic transformation. On the basis of this information characteristic morphologic and biochemical findings for the following conditions will be mentioned: viral hepatitis, toxic hepatitis, deficiency changes (all three examples of medical hepatitis) and extrahepatic cholestatic hepatitis with or without bacterial infection as an example of a surgical condition. Emphasis also will be laid upon the confusing picture of intrahepatic cholestatic hepatitis (cholangiolitis, xanthomatous biliary cirrhosis) which, despite being a medical condition, shows functional and morphologic changes characteristic of extrahepatic biliary obstruction.

Discussion:
Michael Karl, M.D., St. Louis.
Earl L. Loyd, M.D., Jefferson City.

Intermission to View Exhibits.

Scientific Session, Gold Room

Joseph L. Fisher, M.D., St. Joseph, presiding

4:00 p. m. The Management of Patients With Abnormal Chest X-Rays, E. E. Glenn, M.D., Springfield.

The first knowledge of many chest lesions is by chest x-ray made in mass surveys, on admission to a hospital or as a part of various types of examinations. One must first make certain that a chest lesion is present and not an artefact on the initial x-ray film. Often the initial film is a phorofluorogram and the reader must report all suspicious shadows. Careful investigation of the patient's history is essential in order to properly evaluate factors of inheritance, exposure to infection, industrial hazards, respiratory irritants and environmental factors.

Laboratory examinations consist chiefly of skin testing, bacterologic and cellular studies of sputum, bronchial secretions and pleural fluid. Fluoroscopic examination by one experienced in this procedure may give information in regard to pulmonary, mediastinal and pleural lesions not otherwise obtainable. Bronchoscopy is necessary in many cases to determine if intrabronchial lesions are present, to obtain a biopsy specimen or to obtain

bronchial secretions for further bacteriologic and cellular studies. Thoracotomy and pulmonary resection have become safe procedures in the hands of a surgeon well trained and experienced in chest surgery.

Only when each case discovered by routine or mass survey chest x-rays is studied thoroughly is the full value of the procedure realized.

4:20 p. m. Discussion:
Paul Murphy, M.D., St. Louis.
C. A. Brasher, M.D., Mount Vernon.

4:30 p. m. The Roentgen Examination and Evaluation of Pulmonary Lesions, Don C. Weir, M.D., St. Louis.

This presentation will include a basic discussion of the technical aspects of chest radiography with special reference to the simple positioning for good film production. Individual chest lesions will be demonstrated by lantern slides with a differential diagnosis given on the basis of the lesion density, configuration, location and the clinical history.

4:50 p. m. Discussion:
S. T. Ellis, M.D., Hannibal.
Michael Shoss, M.D., Cape Girardeau.

7:30 p. m. Annual Banquet. Gold Room.
C. Edgar Virden, M.D., Kansas City, President, presiding.
Problems Facing the Medical Profession, Louis H. Bauer, M.D., Hempstead, New York, President-Elect, American Medical Association.

Wednesday, April 2, 1952, 8:30 a. m., Gold Room

Carl R. Ferris, M.D., Kansas City, presiding

8:30 a. m. Motion pictures.

9:00 a. m. Medico-Legal Aspects of Back Pain, Frank L. Feierabend, M.D., Kansas City.

9:20 a. m. Discussion:
E. C. Funsch, M.D., St. Louis.
F. A. Carmichael, M.D., Kansas City.

9:30 a. m. Stellate Ganglion Block in Various Phases of Heart Disease, H. W. Carle, M.D., St. Joseph.

9:50 a. m. Discussion:
W. I. Park, M.D., Springfield.
Charles F. Wilson, M.D., Cape Girardeau.

Intermission to View Exhibits.

Scientific Session, Gold Room

W. W. Tillman, M.D., Springfield, presiding

10:30 a. m. Treatment of Cancer of the Urinary Bladder With Particular Reference to the Selection of Operation, Gershom J. Thompson, M.D., Rochester, Minn.

It is often difficult to decide how to treat a patient suffering with vesical neoplasm. No clear cut therapeutic indications can be laid down. Nevertheless, it seems worth while to review some of the points which have helped in arriving at a decision on the basis of experience during the last ten years. Selected case histories will be presented to emphasize certain aspects of the problem.

Discussion:
James C. Cope, M.D., Cape Girardeau.
Hjalmar E. Carlson, M.D., Kansas City.

11:00 a. m. Surgical Management of Deformities of the Hands and Feet, F. X. Paletta, M.D., St. Louis.

Presentation is made of several cases of congenital deformities of the hands and feet. Diagrammatic outlines, the surgical technic used for the correction of the deformities is shown and the postoperative results are demonstrated with photographs. Stress is made in regard to the ideal time for surgical correction.

11:20 a. m. Discussion: Robert O'Brien, M.D., St. Louis.

11:30 a. m. Conservative Treatment of Painful Feet, A. P. Rowlette, M.D., Moberly.

Experience in the use of a special type innersole, originally advocated by Morton in 1935, is reviewed. The most common foot complaint seen in office practice is the painful metatarsal arch, usually with a plantar callus under the head of the second or third metatarsal. This innersole alone, or in combination with a heel lift in pronated feet, has given complete relief to these patients. Morton's theories of causation have been resisted by the orthopedists generally. A commercial firm has recently marketed an innersole of this type, but it is of little value since it must be cut accurately to fit each patient's foot. The author makes no apology for his topic, feeling that indifference through the years on the part of the medical profession has driven foot sufferers to seek aid from the shoe clerk and the chiropodist, neither of whom has the proper background to diagnose or treat conditions of the foot.

11:50 a. m. Discussion:
Stanley M. Leydig, M.D., St. Louis.
Oscar P. Hampton, M.D., St. Louis.

Scientific Session. Gold Room

Ralph A. Kinsella, M.D., St. Louis, Moderator

1:30 p. m. What's New In Medicine?
Antibiotics, Carl G. Harford, M.D., St. Louis.
Urology, Gershom J. Thompson, M.D., Rochester, Minn.
Cardiovascular Therapy, O. P. J. Falk, M.D., St. Louis.
Deficiency Diseases, R. O. Muether, M.D., St. Louis.
Arthritis, Paul O. Hagemann, M.D., St. Louis.
2:45 p. m. Discussion.

SCIENTIFIC EXHIBITS

An Introduction to Fractures. Missouri State Medical Association on Fractures and Missouri Regional Committee on Trauma of the American College of Surgeons. Booth S-1.

Testing the Drunken Driver. American Medical Association and Missouri State Medical Association Committee on Alcoholism. Booth S-2.

Trachoma in Missouri. A. A. Siniscal, M.D., Rolla, State Trachoma Hospital. Booth S-3.

Blue Cross—Blue Shield in Missouri. Booth S-4.

The Physical Therapist at Your Service in Missouri. Missouri Chapter, American Physical Therapy Association. Booth S-5.

Missouri Society of Medical Technologists. Booth S-6.

St. Louis University Cooperative Heart Program. Booth S-7.

St. Louis Diabetes Association. Booth S-8.

Headache: Diagnosis and Treatment. Robert E. Ryan, M.D., St. Louis. Booth S-9.

Surgical Management of Congenital Deformities of Hands and Feet. F. X. Paletta, M.D., St. Louis. Booth S-10.

Management of the Institutional Epileptic at the St. Louis State Hospital. Leopold Hofstatter, M.D., St. Louis. Booth S-11.

Emergency Medical Service: Civil Defense. Carroll P. Hungate, M.D., Kansas City. Booth S-12

Rehabilitation Institute, Kansas City. Booth S-13.

Rheumatism Clinic, General Hospital No. 1, Kansas City. Booth S-14.

Home Physical Therapy of Arthritis. Sedgwick Mead, M.D., and Beatrice F. Schulz, A. R. P. T., Division of Physical Medicine, Washington University School of Medicine. Booth S-15.

TECHNICAL EXHIBITS

Hotel Jefferson—St. Louis

C. B. Fleet Co., Inc., Lynchburg, Va. Booth 1.

C. B. Fleet Co., Inc., cordially invites you to visit Booth 1. Increasingly, during the last fifty years, to the medical profession, sodium phosphate has come to mean Phospho-Soda (Fleet), the pure, stable, aqueous solution of the two U.S.P. sodium phosphates.

The Dick X-Ray Company, St. Louis. Booth 2.

The Dick X-Ray Company cordially invites you to visit their booth to see the Three Dimensional Model Laboratory of Westinghouse X-Ray Apparatus; the new Cambridge Simpli-Scribe Direct Writing Electrocardiograph, and the Liebel-Flarsheim SW-660 Short Wave Diathermy with single dial control and cavity type frequency control.

CAMEL CIGARETTES, NEW YORK. BOOTH 3.

Camel Cigarettes are featuring color slides of background data from their newest research. After weekly examinations of the throats of hundreds of men and women smoking Camel Cigarettes exclusively for thirty days, throat specialists reported "Not one single case of throat irritation due to smoking Camels."

SHARP & DOHME, PHILADELPHIA. BOOTH 4.

Research data relative to the potentiating effect of the antibiotics, bactracin and tyrothricin, are featured in the Sharp & Dohme booth. The synergistic effect of penicillin in conjunction with the sulfonamides and clinical data on the use of vitamin B12 are also of major interest. Our representatives will welcome your visit.

W. B. SAUNDERS COMPANY, PHILADELPHIA. BOOTH 5.

We invite all doctors attending the meeting of the Missouri State Medical Association to visit our exhibit where we are displaying a complete line of our books including Hyman's "Integrated Practice of Medicine," Hyman's "Progress Volume," Conn's "1952 Current Therapy," new 3rd edition of Callender's "Surgical Anatomy" revised by Drs. Anson and Maddock, Howorth's "Orthopedic Surgery," Meschan's "Atlas of Normal Radiographic Anatomy," Bland's "Clinical Uses of Fluid & Electrolyte," (new 7th edition) Wechsler's "Textbook of Clinical Neurology," Slocumb's "Rheumatic Diseases," Shaffer & Chapman's "Correlative Cardiology" and many other new books and new editions.

THE BORDEN COMPANY, NEW YORK, N. Y. BOOTH 6.

Borden representatives will be more than pleased to discuss a new powdered infant food with you. Bremil is a completely modified milk in which nutritionally essential elements of cow's milk have been adjusted in order to supply the nutritional requirements of infants deprived of human milk. Also exhibited is Mull-Soy, Dryco, Biolac and other prescription products.

G. D. SEARLE & CO., CHICAGO, ILLINOIS. BOOTH 7.

You are cordially invited to visit the Searle booth where our representatives will be happy to answer any questions regarding Searle Products of Research. Featured are Banthine, the true anticholinergic drug for the treatment of peptic ulcers; Dramamine, for the prevention and active treatment of motion sickness and Alidase, Searle brand of hyaluronidase which permits subcutaneous feedings at intravenous speed. Other time proven products of Searle Research on which information may be obtained are Searle Aminophyllin in all dosage forms, Metamucil, Ketochol, Floraguin, Kiophyllin, Diodoquin, Pavatrine and Pavatrine with Phenobarbital.

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ELI LILLY AND COMPANY, INDIANAPOLIS, IND. BOOTH 8.

Your Lilly medical service representative cordially invites you to visit the Lilly exhibit located in Booth 8. Featured is a demonstration of functional packaging as an aid to medical practice. Modern manufacturing departments are illustrated. Literature on new therapeutic developments is available. The representative to be in charge of this exhibit is Mr. C. D. McKay.

MEAD JOHNSON & COMPANY, EVANSVILLE, INDIANA. BOOTH 9.

Mead Johnson & Company, Evansville, Indiana, features Lactum and Dalactum, convenient formulas of evaporated milk containing Dextri-Maltose; three water-soluble vitamin preparations, Poly-Vi-Sol, Tri-Vi-Sol, and Ce-Vi-Sol; Fer-In-Sol, a palatable, highly concentrated solution of ferrous sulfate. Also Mulcin, a pleasingly flavored vitamin emulsion, for teaspoonful dosage, as well as four Pablum cereals, including Barley and Rice. Representatives in attendance will be glad to furnish information regarding these products.

C. W. ALBAN & COMPANY, ST. LOUIS, MISSOURI. BOOTH 10.

Alban Company are agents for Stille Sweden instruments, Burdick equipment, J. Sklar, Bausch and Lomb, National Electric, Welch-Allyn, Ritter Company and offer complete service in instruments, hospital supplies, laboratory glass-ware, microscopes and microscopic repairs, hospital equipment and physicians furniture. Medical books of all publishers including medical periodicals and rare or out of print literature.

PARKE, DAVIS & COMPANY, DETROIT. BOOTH 11.

Medical Service Members of Parke, Davis & Company are in attendance at our Exhibit for consultation and discussion of products listed in our pharmaceutic, antibiotic and biologic catalog. Important specialties, as Chloromycetin, Pennicillin S-R, Benadryl, Vitamins, Oxycel, etc., are featured. You are invited to visit our exhibit.

VAN PELT & BROWN, INC., RICHMOND, VIRGINIA. BOOTH 12.

EATON LABORATORIES, INC., NORWICH, N. Y. BOOTH 14.

For more efficient control of surface infections, Furacin is now available in various forms for the prevention or treatment of bacterial surface infections in wounds, severe burns, pyodermas, cutaneous ulcers, skin grafts; otitis; cervicitis, vaginitis and preoperative and post-cervicovaginal surgery. Of especial interest is the use of Furacin impregnated gauze and solution by spray in burns.

THE MEDICAL PROTECTIVE CO., FORT WAYNE, INDIANA. BOOTH 15.

Specializing Exclusively in Professional Protection since 1899, The Medical Protective Company provides representation at Booth 15 familiar with all the complexities of professional liability by special training and long experience. An answer to your problems in the Doctor-Patient relationship is yours for the asking.

BURROUGHS WELLCOME & CO. TUCKAHOE, N. Y., BOOTH 16.



Burroughs Wellcome & Co. are displaying Aerosporin, Polymyxin B Sulfate, a new antibiotic effective against pseudomonas aeruginosa and which destroys most other gram-negative bacilli; also Polysporin, Polymyxin B-Bacitracin Ointment, broad spectrum for all pyogenic infections which rarely sensitizes and resistance rarely develops.

DOHO CHEMICAL CORPORATION, NEW YORK, N. Y. BOOTH 17.

Doho Chemical Corporation is pleased to exhibit Auralgan, the ear medication for the relief of pain in otitis media and removal of cerumen; Rhinalgan, the nasal decongestant which is free from systemic or circulatory effect and equally safe to use on infants as well as the aged; and the New Otosmosan, the effective, nontoxic ear medication which is Fungicidal and Bactericidal (gram negative—gram positive) in the suppurative and aural dermatomycotic ears. Mallon Chemical Corporation, subsidiary of the Doho Chemical Corporation is also featuring Rectalgan, the liquid anesthesia for relief of pain and discomforture in hemorrhoids, pruritus and perineal suturing.

A. S. ALOE COMPANY, ST. LOUIS. BOOTH 18.

Visit Booth 18 where the Aloe representatives will show you a cross section of the complete stock of physicians' equipment and supplies carried by the A. S. Aloe Company. Highlighted is the New Model Steeline—tomorrow's treatment room furniture today—featuring the body contour table top, magnetic door catches and advanced design all in new decorators' colors.

UNITED MEDICAL EQUIPMENT COMPANY, KANSAS CITY. BOOTH 19.

The new Profexray 100 milliampere 100 kilovolt tilt table with the complete automatic control is exhibited by the United Medical Equipment Company. Also on display is the Cardiotron, direct writing electrocardiographic machine; actual permanent electrocardiograms will be made on Cardiotron scratch proof and moisture proof paper. Raytheon Microwave and Birtcher Short Wave equipment are shown.

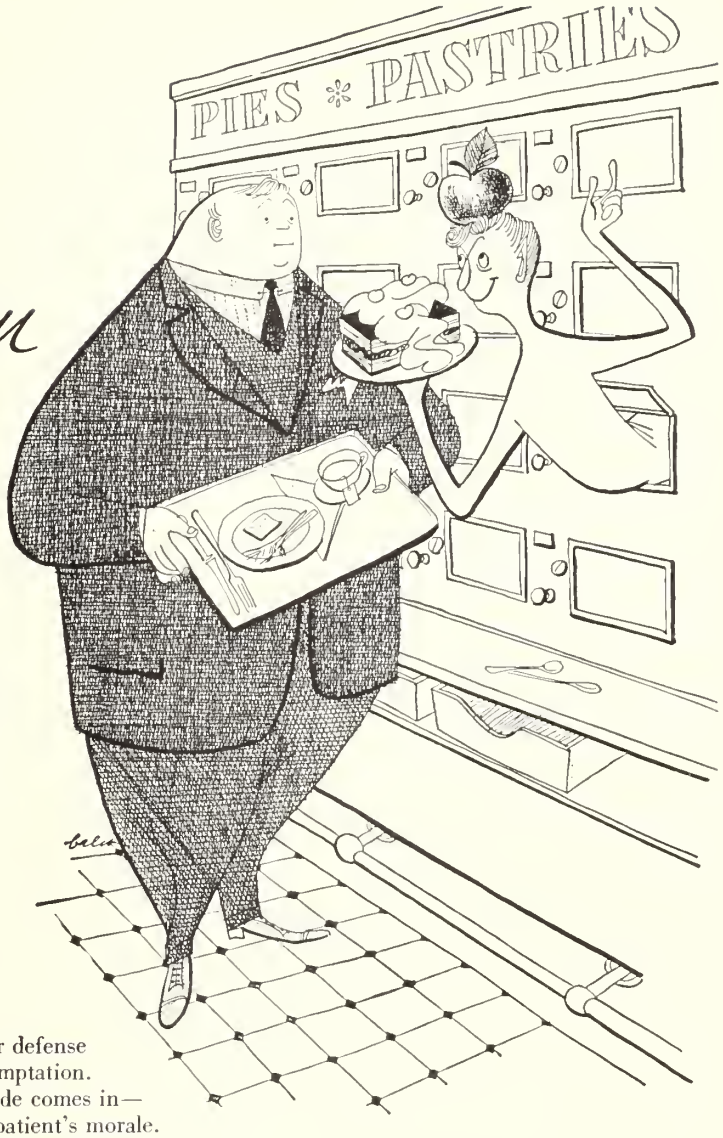
ZIMMER MANUFACTURING COMPANY, WARSAW, INDIANA. BOOTH 20.

At Booth 20 you will find the line of Zimmer Fracture Equipment. Mr. Herb McWhorter will be especially pleased to demonstrate the Brown Electro-Dermatome, which cuts grafts with amazing speed, accuracy and ease without the use of glue, cement, suction cups or tape.

MEDCO PRODUCTS COMPANY, TULSA, OKLAHOMA. BOOTH 21.

The Medcotron Stimulator, for the stimulation of innervated muscle groups ancillary to treatment by massage, is a low volt generator that will generate plenty of your interest. Electrical muscle stimulation is a valuable form of rehabilitation therapy. Be sure to visit our booth for a personal demonstration.

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Chas. Pfizer & Co., Inc., Brooklyn, N. Y. Booth 22.

Terramycin, newest of the broad-spectrum antibiotics forms a dramatic central feature of the display of Chas. Pfizer & Co., Inc., Brooklyn, N. Y. The newest dosage forms of Terramycin are exhibited and indications for use are described.

Wm. P. Poythress & Co., Inc., Richmond Va. Booth 23.

Physicians attending the meeting of the Missouri State Medical Association are cordially invited to visit the Poythress exhibit. Literature, samples and information on the well-known specialty preparations; Trocinate, Solfoton, TCS, Merpectogel and Panalgesic, are made available by Mr. Walter Kaemph, Jr., your Poythress representative.

W. C. Scott & Company, Kansas City, Missouri. Booth 24.

Lov-E' Brassiere Company, Hollywood, California. Booth 25.

We invite you to inspect our highly specialized line of therapeutic breast supports which enable the physician to prescribe remedial support for specific breast conditions. Special brassieres for pre-natal, post-partum, atrophic, hypertrophic and mastectomy. Available in the LOV-E' Section, corset department of Famous-Barr Company, St. Louis. Our representative will be happy to answer any questions.

J. B. Lippincott Company, Philadelphia, Pa. Booth 26.

J. B. Lippincott Company presents, for your approval, a display of professional books and journals geared to the latest and most important trends in current medicine and surgery. These publications, written and edited by men active in clinical fields and teaching, are a continuation of more than 100 years of traditionally significant publishing.

Coreco Research Corp., New York, N. Y. Booth 27.

The "Coreco" Camera is designed to photograph all surface areas of the body —from 1 to 1 close-up pictures to half-body size—and all cavities of the human body, such as mouth, throat, ear, nose, vagina and rectum. The Camera carries its own specially developed, fully color-corrected bulb and mechanism for complete control of its color temperature and exposure within the camera itself. There is an automatic view finder synchronized with the automatic camera mechanism to permit viewing until a fraction of a second before exposure. The camera provides for automatic focusing.

A. H. Robins Company, Inc., Richmond, Va. Booth 28.

The A. H. Robins Company exhibit is featuring Phenaphen and Phenaphen with Codeine, "the complete analgesics"; and Entozyme, the "tablet-within-a-tablet" for comprehensive digestive therapy. Robins Medical Service Representatives welcome the privilege of discussing with physicians attending the Assembly these and other products in the company's line of prescription specialties.

Vaisey-Bristol Shoe Company, Inc., Rochester, N. Y. Booth 29.

Representatives will explain the diagnostic value of Jumping Jack shoes and the criteria for determining whether the early walking child is strengthening his foot by proper foot function or is possibly damaging it by walking poorly. Jumping Jack shoes are not "corrective" shoes but representatives are equipped to discuss therapeutic wedging which may be installed in the shoes by prescription. Of especial interest is the Sincock system of determining the precise amount of correction needed to rectify a faulty gait. Many doctors have lauded Dr. Sincock's empirical method as "genius."

Hoffmann-La Roche, Inc., Nutley, N. Jersey. Booth 30.

Roche will feature Gantrisin, the more soluble sulfonamide which has a wider antibacterial spectrum. Gantrisin is highly effective in the treatment of systemic and urinary tract infections. Stop at the Roche booth where members of the field staff will be glad to discuss this more effective and better tolerated sulfonamide.

Baby Development Clinic, Chicago, Illinois. Booth 31.

Baby Development Clinic. The psychological and emotional aspects of early infant feeding are presented in visual, as well as printed form. Ideal for use of doctors, nurses, teachers, and others who are in contact with expectant parents, medical students, or nurses in training.

Maternity Counselling Service. A courtesy service available to doctors for their maternity patients—relieves doctors of discussing layette needs and other preparations for home and baby. No charge or obligation to doctor or patients. Supported by firms included in exhibit.

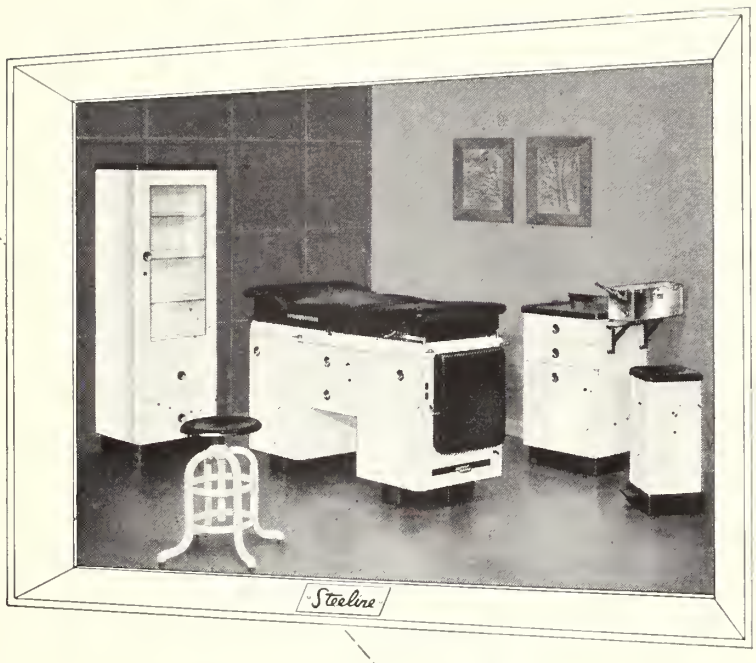
Ciba Pharmaceutical Products, Inc., Summit, New Jersey. Booth 32.

Ciba Pharmaceutical Products, Inc., Summit, New Jersey, invites you to visit its exhibit which features Pyribenzamine, HCL, the antihistaminic drug for prevention and relief of anaphylaxis and many forms of allergy. Antistine, the effective antihistaminic with few side effects will also be featured. Representatives in attendance will gladly answer any questions about these and other Ciba products.

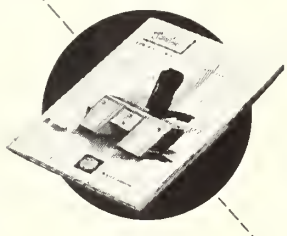
Hamilton-Schmidt Surgical Company, St. Louis. Booth 33.

The Hamilton-Schmidt Surgical Company is showing a line of foreign and domestic surgical instruments and allied items for the physician and surgeon. The latest advance in diathermy apparatus, Raytheon Microtherm, is, also, exhibited along with Burdick physical therapy and Castle and Pelton sterilizing equipment.

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E. R. Squibb & Sons, Long Island City, N. Y. Booth 34.

Squibb will feature Pentids at the Missouri State Medical Association. Pentids are the new 200,000 unit penicillin tablets (buffered) formulated for convenient t.i.d. dosage. Your Squibb representative invites you to visit the Squibb booth to discuss Pentids and related products.

Eggert-Carroll-Schroeder Agency, St. Louis, Missouri. Booth 35.

Information of interest is offered on the Special Group Disability Policy which has been the officially sponsored program of accident and sickness insurance for the members of the Missouri State Medical Association since it was approved by the Council in 1943. We will welcome your visit and inquiries.

Brown & Williamson Tobacco Corporation, Louisville, Ky. Booth 36.

The Brown & Williamson Tobacco Corporation cordially invites members of the Missouri State Medical Association to visit the separate exhibits of Kool mildly mentholated and Viceroy filter tip cigarettes, brands of particular interest to the medical profession. Souvenirs will be presented to members who register at the Kool and Viceroy booths.

Eisele & Company, Nashville, Tenn. Booth 37.

Eisele & Company are displaying their clinical thermometers, hypodermic syringes and needles, interchangeable syringes, and their line of Specialty glassware.

Wyeth, Inc., Philadelphia, Pennsylvania. Booth 38.

Wyeth Incorporated extends to you a cordial invitation to visit the Wyeth booth where trained representatives will be pleased to discuss and supply literature concerning many widely prescribed Wyeth ethical specialties Featured in this exhibit will be Thiomerin, a recently developed safe mercurial diuretic, and Wydase, Wyeth's highly purified hyaluronidase.

Sandoz Pharmaceuticals, New York, New York. Booth 39.

It is with a great deal of pleasure and pride that we invite you to visit our Scientific Exhibit on Vascular Headaches. Our Missouri representative, Mr. Sidney H. Lane will gladly welcome you.

Pet Milk Company, St. Louis. Booth 40.

Specially trained representatives are in attendance to discuss the use of Pet Milk in infant feeding, and to present many services that are time-savers for busy physicians. Miniature Pet Milk cans will be given to visitors at the exhibit.

Coca-Cola Company, Atlanta, Ga. Booth 41.

Ice-cold Coca-Cola served through the courtesy and cooperation of the Coca-Cola Bottling Company of St. Louis and The Coca-Cola Company.

The National Drug Company, Philadelphia, Pa. Booth 42.

The National Drug Company, pioneer in the clinical application of resin therapy, is featuring Resion, an intestinal absorbent; Resinat, a polyamine exchange resin for the treatment of peptic ulcer; and Natrinil, a cation exchange resin for the control of edema. Trained representatives are in attendance to discuss our resin preparations and other specialties: ACTH, Ammivin, AVC Improved, Benat, DTP Vaccine, Natolone, as well as any of National's vast array of pharmaceutic and biologic products.

Winthrop-Stearns, Inc., New York, N. Y. Booth 43

Winthrop-Stearns, Inc., New York, Booth 43, features the following products: Demerol, powerful analgesic, spasmolytic and sedative, especially well suited for preoperative and postoperative use; Neo-Synephrine, time-tested, well tolerated, prolonged decongestive; Neo-Synephrine Thenfadil, nasal solution, potent vasoconstrictor with antihistaminic, for common cold, allergic rhinitis, acute and chronic sinusitis.

Sealy Co. of the Southeast, Memphis, Tennessee. Booth 44.

Sealy will again feature the Firm-O-Rest Posture pedic mattress and foundation—the ideal adjuvant to backache theraphy. It provides a flat bed with no sag, acts as a firm splint to the back, yet affords maximum comfort. The Junior Posturepedic mattress and foundation, designed especially for young people between the ages of 4 and 16 years, is shown for the first time.

H. G. Fischer & Co., Franklin Park, Illinois. Booth 45.

At Booth 45 inspect H. G. Fischer & Co.'s modern, efficient, low priced x-ray and physical therapy equipment. Let our representatives point out many features of advantage in these units and other models not on display. Your visit welcome—No obligation.

Doris Appel Medical Sculptures. Lynn, Mass. Booth 46.

Medical History Portrait Plaques of Imhotep, Hippocrates, Galen, Maimonides, Vesalius, Pare, Harvey, Pasteur, Lister and Poentgen. They are suitable for the Doctor's office and waiting room, medical institutions, schools and hospitals. The plaques are of light weight composition—as easy to hang as a picture. Also Medical History Bookends of Imhotep, Hippocrates, Maimonides and Roentgen—solid, functional and sturdy enough to hold up large medical volumes.

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O'Connell Bros., Inc., St. Louis, Mo. Booth 47.

The O'Connell Bros. extends to members of the Missouri State Medical Association and their guests a cordial invitation to visit booth No. 47 where they will display a number of their leading ethical pharmaceutical preparations. Joe and Bill will be there to serve you in any way possible.

Dumas-Wilson & Co., St. Louis, Missouri. Booth 48.

Extends a cordial invitation to the physicians attending this Annual Session to visit our booth featuring several new specialty items of interest to the specialist as well as the general practitioner.

Philip Morris & Co., New York, New York. Booth 49.

Philip Morris and Company are showing the results of research on the irritant effects of cigarette smoke. These results show conclusively that Philip Morris are less irritating than other cigarettes. An interesting demonstration will be made on smokers at the exhibit which will show the difference in cigarettes.

Lanteen Medical Lab., Inc., Evanston, Illinois. Booth 50.

Lanteen Medical Laboratories, Inc., extend a cordial invitation to visit their Booth No. 50. Our representatives will be happy to discuss a new improved method of contraception involving the Lanteen Flat Spring Diaphragm and Lanteen Jelly; as well as any of the other well known Lanteen items.

Ames Company, Inc., Elkhart, Indiana. Booth 51.

The Ames Diagnostic Kit is featured. This small kit, measuring 3 by 9 inches contains Clinitest—a test for urine-sugar, Bumintest—a test for albumin, Acetest —a test for acetone, and Hamatest—a test for occult blood. No extra reagents, equipment or accessories are needed. This kit is designed for the physician's office, small laboratory, hospital floor use, etc. The Ames representatives will be demonstrating these tests.

The Upjohn Company, Kalamazoo, Michigan. Booth 52.

It is the sincere desire of The Upjohn Company to make some definite contribution to the success of the 1952 meeting. Stop by at booth 52 to relax and discuss topics of mutual interest.

Dome Chemicals, Inc., New York, N. Y. Booth 53.

Originators of Domeboro (aluminum acetate) therapy. Makes a soothing, stable, lead-free, buffered (pH approximately 4.2) aluminum acetate solution that is definitely the first approach in all cases of acute cutaneous inflammation, regardless of cause. Featuring VI-Dom-A Pillettes, small pills containing 50,000 USP units of synthetic Vitamin A each, with absolutely no fishy taste or odor and causing no gastric upsets. Also Kolpix "A" and Dolpix "D," two whole crude coal tar creams, color disguised and water-washable, for wet or dry eruptions respectively.

Dairy Council of St. Louis, St. Louis, Mo. Booth 54.

Exhibit shows seven basic food groups essential to nutrition and general health. "If you are Six, Sixteen, or Sixty, you need these foods everyday."

Bilhuber-Knoll Corp., Orange, New Jersey. Booth 55.

For the latest information on Octin in migraine; Valoctin in dysmenorrhea; Quadrinal in chronic asthma; Metrazol, intravenously, in alcohol and barbiturate poisoning, orally, to combat mental and physical retrogression in the aged patients, visit the Bilhuber-Knoll Corp., Booth 55. Your discussions on these and their prescription chemicals, Bromural, Dilaudid, Theocalcin, etc., will be welcomed.

Hanley Medical Equipment Company, St. Louis, Missouri. Booth 56.

The Hanley Medical Equipment Company is showing a 3 Drawer X-Ray Film Filing Cabinet for 14 inch and 17 inch Films at the special price of $73.00, also newly designed X-Ray Storage Cabinet which has 10 shelves with a capacity of approximately 5,000 films. The company also distributes Birtcher Diathermies and Standard X-Ray Equipment which will also be on display.

Chilcott Laboratories, Morris Plains, New Jersey. Booth 57.

You are cordially invited to inspect recent clinical data on the use of Peritrate, a new drug for prophylaxis in angina, and reports dealing with the control of oral anticoagulant therapy with Simplastin. Also available is clinical information about Proloid, Tedral and Cellothyl.

M & R Laboratories, Columbus, Ohio. Booth 58.

Our representatives for Similac and Cerevim will be most happy to discuss with you the merits and use of our products in the field of infant and child nutrition.

General Electric, X-Ray Department, Milwaukee, Wisconsin. Booth 59.



Doctor, be your own judge... try this simple test

With so many claims made in cigarette advertising, you, Doctor, no doubt prefer to judge for yourself. So won't you make this simple test?

Take a PHILIP MORRIS and any other cigarette

1. Light up either one first. Take a puff—get a good mouthful of smoke —and s-l-o-w-l-y let the smoke come *directly* through your nose.

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You will notice a distinct difference between PHILIP MORRIS and any other leading brand.

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Philip Morris & Co. Ltd., Inc., 100 Park Avenue, New York 17, N. Y.

Travenol Laboratories, Inc., Morton Grove, Illinois. Booth 60.

The new drug, Pyromen (R) is a sterile, nonprotein, non-antigenic bacterial component in a colloidal dispersion for parenteral use. Pyromen (R) is a stimulant for the endocrine and reticulo-endothelial systems, proven of value in the treatment of certain skin disorders, eye disorders, and allergies.

Americana Corporation, Chicago, Illinois. Booth 61.

We extend a cordial invitation to visit our booth, where we have on display the mid-century printing of the Encyclopedia Americana; a supreme reference for generations and also the fortieth anniversary edition of the Book of Knowledge—the most famous of all America's children's references; An American tradition.

J. E. Hanger, Inc., St. Louis, Mo. Booth 62.

J. E. Hanger, Inc., manufacturers of upper and lower extremity prosthetic appliances, are presenting a display embracing life-size models including the improved Hanger Suction Socket Limb for above the knee amputees and cosmetic restoration for hand amputation.

Brown & Williamson Tobacco Corp., Louisville, Ky. Booth 64.

The Brown & Williamson Tobacco Corporation cordially invites members of the Missouri State Medical Association to visit the separate exhibits of Kool mildly mentholated and Viceroy filter tip cigarettes, brands of particular interest to the medical profession. Souvenirs will be presented to members who register at the Kool and Viceroy booths.

V. Mueller & Co., Chicago. Booth 65.

U. S. Vitamin Corporation, New York, N. Y. Booth 66.

See the "oil-in-water" demonstration of liposoluble vitamins A and D made completely water soluble . . . a vitamin technical achievement originated and developed by the U. S. Vitamin Corporation Research laboratories. Three pharmaceutical firsts . . . Vi-Syneral Vitamin Drops—multivitamins in drops solution; Vi-Syneral Injectable—multivitamin parenteral solution and now Vi-Aqua Therapeutic—aqueous multivitamins in capsules . . . for more rapid absorption, greater therapeutic activity, shorter treatment time. We cordially invite you to our booth for detailed literaure and professional samples.

MISSOURI CHAPTER OF AMERICAN COLLEGE OF CHEST PHYSICIANS AND TRUDEAU SOCIETY TO MEET

The annual meeting of the Missouri Chapter of the American College of Chest Physicians and the Trudeau Society will meet on Sunday, March 30, 1952, at the Jefferson Hotel, St. Louis.

PROGRAM

12:00 noon. Luncheon.
1:00 p. m. Round Table Discussion.
Valvulotomy, D. B. Flavan, M.D., chairman; C. Rollins Hanlon, M.D., and Thomas Burford, M.D., St. Louis.
2:00 p. m. Cineradiography in the Study of Thoracic Lesions, Osler Abbott, M.D., Emory University Medical School, Atlanta, Ga.
3:00 p. m. Antracosilicosis, Louis L. Friedman, M.D., Birmingham, Ala.
Discussion: Emmett F. Pearson, M.D., Springfield, Ill.
4:00 p. m. Azotemic Edema of the Lung and Its Relationship to Collagen Disease, L. R. Sante, M.D., St. Louis.
Discussion: Stanley Hampton, M.D., St. Louis.

MISSOURI SOCIETY OF MEDICAL TECHNOLOGISTS

The Fifth Annual Session of the Missouri Society of Medical Technologists will be held March 30, 31, April 1 and 2, 1952, at Hotel Jefferson, St. Louis.

TIME AND PLACE OF MEETING

Sunday, March 30

12:30 p. m. Registration. Hotel Jefferson.
1:00 p. m. Dinner. Hotel Mayfair.
2:00 p. m. Business Meeting.
7:30 p. m. Entertainment: Show Boat.

Monday, March 31

8:30 a. m. Registration. Hotel Jefferson.
9:15 a. m. Scientific Session. Room 1, Hotel Jefferson.
10:15 a. m. Intermission to View Exhibits.
10:45 a. m. Scientific Session. Room 1, Hotel Jefferson.
11:15 a. m. Round-table Discussion. Room 9, Hotel Jefferson.
2:15 p. m. Hospital Demonstrations at Barnes, St. Louis City and Firmin Desloge Hospitals.
4:00 p. m. Intermission to View Exhibits.

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$10,000.00 accidental death $16.00
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$15,000.00 accidental death $24.00
$75.00 weekly indemnity, accident and sickness quarterly
$20,000.00 accidental death $32.00
$100.00 weekly indemnity, accident and sickness quarterly
Cost has never exceeded amounts shown
Also Hospital Policies for Members
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85c out of each $1.00 gross income used for members' benefit

INVESTED ASSETS $4,000,000.00 — **PAID FOR CLAIMS** $18,300,000.00

$200,000.00 deposited with State of Nebraska for the protection of our members.

Disability need not be incurred in line of duty—benefits from the beginning day of disability

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Advertisement



From where I sit *by* Joe Marsh

It Isn't the Heat— It's the Hide!

Big discussion after the Grange meeting Friday night. Tik Anderson said that hogs were more affected by the hot weather than cattle. Skeeter Morgan declared that it wasn't so—that he *never* saw any hogs bothered by the hot sun like his cows were.

I was glad when Rusty Robinson stepped in.

"Boys," he says, "don't get so riled up. It all depends on what *color* the livestock are. Hogs or cattle, those with light-colored coats absorb less heat from the sun than animals with dark coats. You're *both* right!"

From where I sit, so many useless arguments could be avoided if a person would remember he doesn't have all the right on his side. Like those who would tell others how to practice their profession—like those who would insist that coffee, for instance, is the only drink, forgetting that other people have a right to a glass of beer now and then. If we wouldn't get so "het up" about our prejudices—we'd all be better off!

Joe Marsh

Copyright, 1952, United States Brewers Foundation

Tuesday, April 1

8:30 a. m. Registration. Hotel Jefferson.
9:15 a. m. Scientific Session. Room 1, Hotel Jefferson.
10:15 a. m. Intermission to View Exhibits.
10:45 a. m. Scientific Session. Room 1, Hotel Jefferson.
11:15 a. m. Round-Table Discussion. Room 9, Hotel Jefferson.
2:00 p. m. Hospital Demonstrations at Barnes, St. Louis City and Firmin Desloge Hospitals.
4:00 p. m. Intermission to View Exhibits.
7:00 p. m. Annual Banquet, Missouri State Medical Association.

Wednesday, April 2

9:15 a. m. Scientific Session. Room 1, Hotel Jefferson.
10:15 a. m. Intermission to View Exhibits.
10:45 a. m. Scientific Session. Room 1, Hotel Jefferson.
11:15 a. m. Round-Table Discussion. Room 9, Hotel Jefferson.
12:15 p. m. Intermission to View Exhibits.

SCIENTIFIC PROGRAM

Monday, March 31, 1952, 9:15 a. m., Room 1, Hotel Jefferson

Atypical Acid-Fast Organisms Encountered in the Laboratory, Victor B. Buhler, M.D., Pathologist, Kansas City General Hospital, Kansas City.

Diagnosis of Blood Dyscracias by Sternal Marrow Aspiration: Its Uses and Limitations, Herbert C. Wiegand, M.D., St. Louis.

Recent Advances in Blood Clotting, Walter G. Rice, M.D., St. Louis.

Tuesday, April 1, 1952, 9:15 a. m., Room 1, Hotel Jefferson

Practical Aids in Fungus Culture, Mrs. Elizabeth Robben, M.A., M.T. (ASCP), Bacteriologist, Veterans Hospital, St. Louis.

Kidney Function Tests, Hollis Allen, M.D., Pathologist, St. Louis.

Instrumentation in the Medical Laboratory, Theodore E. Weichselbaum, Ph.D., St. Louis.

Wednesday, April 2, 1952, 9:15 a. m., Room 1, Hotel Jefferson

Technic of Performing the Rh Titer Test, Miss Ruth Ragsdale, Technologist, Columbia.

An Evaluation of High-Protein Cross-Matching, Mrs. Bernice Jenkins, M.T. (ASCP), Head Blook Bank Technician, Kansas City General Hospital, Kansas City.

An Evaluation of the Plastic Bag in Blood Banking, Raymond O. Muether, M.D., St. Louis.

MISSOURI PHYSICAL THERAPY ASSOCIATION, INC.

The Missouri Physical Therapy Association, Inc., will meet on Sunday, March 30, at 2:00 p. m., at Hotel Jefferson, St. Louis, and on Monday, March 31.

PROGRAM

Sunday, March 30, 1952, 9:00 a. m., Room 8, Hotel Jefferson

2:00 p. m. Business Meeting.
7:00 p. m. Entertainment to be announced.

Monday, March 31, 1952, 9:00 a. m., Room 8, Hotel Jefferson

9:00 a. m. Phantom Limb Pain, Alex Harell, M.D., St. Louis.
9:30 a. m. Physical Therapy and Depth Psychology, Thomas R. Thale, M.D., St. Louis.
10:00 a. m. Intermission to View Exhibits.
10:30 a. m. Fitting the Prosthesis: Lower Extremity Amputee, Edward C. Holscher, M.D., St. Louis.
11:00 a. m. Training of Lower Extremity Amputee, Speaker-Demonstrator to be announced.
1:30 p. m. Etiology and Clinical Manifestations of Cerebral Palsy, Paul J. Zentay, M.D., St. Louis.
2:00 p. m. Bracing for Spastic Conditions, D. Elliott O'Reilly, M.D., St. Louis.
2:30 p. m. Rehabilitation of the Paraplegic, Demonstration, Ray H. Trlica, A.R.P.T., St. Louis.
3:30 p. m. Intermission to View Exhibits.
3:45 p. m. Arthritis: Medications and Their Effects, Paul O. Hagemann, M.D., St. Louis.
4:15 p. m. Physical Agents in the Treatment of Arthritis, Sedgwick Mead, M.D., St. Louis.
4:45 p. m. Adjournment.

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WALTER L. MOORE, M.D.

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MISSOURI SOCIETY OF X-RAY TECHNICIANS TO HOLD ITS TWENTIETH ANNUAL MEETING AT JEFFERSON CITY

The twentieth annual meeting of the Missouri Society of X-Ray Technicians will be held March 28 and 29, 1952, at the Governor Hotel, Jefferson City.

PROGRAM

Friday, March 28, 1952

9:00 a. m. Review for prospective registrants to be conducted by Clair S. Vincent, R.T., Jefferson City.

1:00 p. m. Registry examination. S. A. Morton, M.D., Radiologist, Milwaukee, Wisconsin, President of the American Registry of X-Ray Technician will proctor the examination.

7:00 p. m. Refresher Course to be conducted by J. W. Lewis, M.D., Radiologist, Colorado Springs, Colorado.

9:00 p. m. Informal Reception. Central Missouri Society of X-Ray Technicians, host.

Saturday, March 29, 1952

7:45 a. m. Refresher Courses to be continued. The following Radiologists will participate: J. I. Chalkley, M.D. and C. M. Waggoner, M.D. of Columbia, Missouri and J. S. Summers, Jr., M.D., of Jefferson City, Missouri, and S. A. Morton, M.D., Milwaukee, Wisconsin.

12:15 p. m. Luncheon honoring technicians of religious communities. Guest speaker, S. T. Ellis, M.D., Radiologist, Hannibal, Missouri.

1:30 p. m. Symposium: Practical Ideas in Routine Roentgenography.
Radioactive Isotopes Their Use in Industry and Medicine, presented by Dr. Lewis.
Tour of the Capitol.

7:00 p. m. Annual Banquet. Marcella L. Cunningham, R.N., R.T., President, presiding.

A cordial invitation is extended to x-ray technicians, members of the medical profession and representatives of the film and equipment manufacturers.

FINANCIAL STATEMENT FOR 1951

LENNERTSON AND COMPANY
CERTIFIED PUBLIC ACCOUNTANTS

ROBERT A. LENNERTSON, C. P. A.
MEMBER—AMERICAN INSTITUTE OF ACCOUNTANTS
HOWARD E. SALOMO, C. P. A.
SAINT LOUIS, MISSOURI

February 12, 1952

Missouri State Medical Association,
634 North Grand Boulevard,
St. Louis, Missouri.
Gentlemen:

An examination has been made of the records of the Missouri State Medical Association for the year 1951 and a report is presented thereon together with the following attached statements:

Exhibit A. Balance Sheet.
Exhibit B. Income Statement.
Exhibit C. Statement of Committee and Meeting Expenses.
Exhibit D. Dues Receivable and Membership by Counties.

In connection with the statements, it should be noted that members' dues and assessments are taken into income on the cash basis whereas all other accounts are maintained on the accrual basis.

Scope of Examination

The Balance Sheet as at December 31, 1951 and the Statement of Income and Expenses for the year 1951 were reviewed. Examinations or tests were made of the accounting records, in the manner and to the extent deemed appropriate, without making a detailed audit of the transactions.

Cash in banks as shown by the books was reconciled with the regular monthly bank statements and confirmation letters received direct from the depositories. The petty cash fund of $25.00 and United States 2½ per cent Savings Bonds Series G with a par value of $55,000.00 were verified by physical inspection. Bond interest in the amount of $1,375.00 has been properly accounted for on the books. Recorded cash receipts for the year were traced in total into the bank account as deposits and disbursements for the period were substantiated by an inspection of paid checks, purchase invoices and other data on file. Selective tests were made of the income and expense accounts for the period. It was noted that space was contributed by The Journal for advertising by the U. S. Treasury in connection with Defense Bonds.

Statement of Income and Expenses

The financial result of the Association's activities for the year 1951 was an excess of income over expenses in the amount of $17,495.35 as set forth in Exhibit B. It should be noted that the excess of income for the year is attributable to special assessments in the amount of $24,760.00 collected during the year 1951.

Legal Expense in the amount of $2,707.60 was incurred in connection with the Audrain County Hospital suit in which the Missouri State Medical Association is named as a co-defendent. The decision rendered by the lower court has been appealed and is now pending in the Circuit Court of Appeals.

Balance Sheet

Exhibit A presents the asset and liability accounts of the Association at December 31, 1951 and comments follow on certain Balance Sheet accounts not previously discussed.

Accounts receivable from Journal advertisers are summarized below as to date of charge:

Month of Charge	*Amount*
December 1951	$1,349.37
November 1951	20.40
October 1951	20.40
September 1951	20.40
Prior (includes $100.80 from 1950)	204.30
Total	$1,614.87

Account receivable, Exhibitor, in the amount of $125.00, represents an unpaid amount for exhibit space at the 1950 annual session.

Unpaid Dues and Assessments in the amount of $5,935.00, offset by a reserve account in like amount, represents 1951 dues of delinquent members carried at December 31, 1951 at the request of the local societies. Other members, with delinquent dues at the end of the year, were dropped from membership in accordance with by-laws. A summary of unpaid dues and assessments and a schedule of membership by counties, as shown by the records, is presented in Exhibit D.

Furniture and Fixtures continue to be stated in the fixed amount of $1,000.00, purchases during the year having been charged to expense in lieu of depreciation.

Records and data on file were carefully reviewed for liabilities at December 31, 1951, and it is believed that all current liabilities of substantial amount are included in the Balance Sheet. There is a contingent liability in the amount of $900.00 on three malpractice suits reported pending against members. The Association's by-laws require it to furnish assistance in an amount not to exceed $300.00 in each case.

Advance payments in the amount of $2,668.50 were made by exhibitors for exhibit space at the 1952 annual session and these payments will be taken into income when earned in 1952.

General

The following insurance was in force at the close of the year:

Insurance on	*Type of Coverage*	*Amount*
Furniture and Fixtures	Fire and Extended Coverage	$2,000.00
Employees	Workmen's Compensation	Statutory
Lessee's Liability	Bodily Injury	25/50,000.00
Treasurer	Fidelity Bond	20,000.00
Executive Secretary	Fidelity Bond	1,000.00
Employee	Life Endowment Policy with Disability Benefits (Cash Value $6,259.68)	12,000.00
Automobiles of Executive Secretary and Field Secretary	Non-ownership—Bodily Injury	25/50,000.00
	Property Damage	5,000.00

Relationship of Stress to Autonomic Lability

Studies in psychosomatics have shown that functional disorders often are a result of the patient's inability to adjust to emotionally stressful situations (stressor factors).

Nervous tension and chronic anxiety, discharged through a labile Autonomic Nervous System, can cause somatic disturbance. [1,2] Such states may involve any one of the organ systems or several at one time. [1,3] The outline below is designed to relate gastrointestinal and cardiovascular symptomatology to the exaggerated response of the autonomic nervous system.

	Physiologic Effects of Autonomic Discharge	
	Sympathetic	Parasympathetic
Gastro-intestinal System	Hypomotility Intestinal Atony Hyposecretion Reduced salivation	Hypermotility Gastrointestinal spasm Hypersecretion
Cardio-vascular System	Rapid heart rate Peripheral vaso-constriction	Slow heart rate Vasodilatation
Functional Manifestations	Palpitation Tachycardia Elevated blood pressure Dry mouth and throat	Heartburn Nausea-vomiting Low blood pressure Colonic spasm

The data here tabulated is from references [3,4,5,6,7] given below.

When the clinical picture is suggestive of functional disorder, the diagnosis is supported by the presence of the following indications of autonomic lability:

Variable Blood Pressure
Body Temperature Variations
Changing pulse rate
Deviations in B. M. R.
Exaggerated Cold Pressure Reflex
Oculo-Cardiac Reflex Abnormalities
Glucose Tolerance Alterations

Therapy in these cases is directed toward: 1) relieving the somatic disturbance to prepare the patient for psychotherapy*; 2) guidance in making adjustment to stressful situations and correction of unhealthy attitudes.

*Drug treatment using adrenergic and cholinergic blocking agents in conjunction with sedatives. [8,9,10]

1. Ebaugh, F.: Postgrad. Med. *4:* 208, 1948. 2. Wilbur, D.: J.A.M.A. *141:* 1199, 1949. 3. Williams, E. and Carmichael, C.: J. Nat'l. Med. Assoc. *42:* 32, 1950. 4. Goodman, L. and Gilman, A.: The Pharmacological Basis of Therapeutics, The Macmillan Co., 1941. 5. Katz, L. et al: Ann. Int. Med. *27:* 261, 1947. 6. Weiss, E. et al: Am. J. Psychiat. *107:* 264, 1950. 7. Alvarez, W.: Chicago Med. Soc. Bulletin, 581, 1950. 8. Rakoff, A.: A Course in Practical Therapeutics, Williams and Wilkins, 1948. 9. Karnosh, L. and Zucker, E.: A Handbook of Psychiatry. C. V. Mosby Co., 1945. 10. Harris, L.: Canad. M.A.J. *58:* 251, 1948.

Sandoz Pharmaceuticals

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Prescription Perfect



RED LABEL • BLACK LABEL
Both 86.8 Proof

Every drop of Johnnie Walker is made in Scotland—using only Scotland's crystal-clear spring water. Every drop of Johnnie Walker is distilled with the skill and care that comes from many generations of fine whisky-making.

Every drop of Johnnie Walker is guarded all the way to give you *perfect* Scotch whisky . . . the same high quality the world over.



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Canada Dry Ginger Ale, Inc., New York, N.Y., *Sole Importer*

Under the provisions of the non-ownership policy, the Executive Secretary is required to carry the following insurance:

Automobile—Executive Secretary	Bodily Injury	15/30,000.00
	Property Damage	5,000.00

The records of the Association have been well maintained during the year 1951 in conformity with generally accepted accounting principles, applied on a basis consistent with that of the preceding period.

Yours very truly,
R. A. Lennertson
Certified Public Accountant.

Exhibit A

Missouri State Medical Association
Balance Sheet, December 31, 1951

ASSETS

Cash:		
Mercantile Trust Company (Treasurer's Account)	$23,514.98	
Mercantile—Commerce National Bank (Secretary's Account)	462.74	
Petty Cash Fund	25.00	$24,002.72
U. S. Savings Bonds—Series G—Cost and Par Value		55,000.00
Accounts Receivable:		
Advertisers	$ 1,614.87	
Exhibitor	125.00	1,739.87
Dues and Assessments Receivable—Exhibit D:		
Dues	$ 885.00	
Assessments	5,050.00	5,935.00
Furniture and Fixtures		1,000.00
Advances for Traveling Expenses		204.24
		$87,881.83

LIABILITIES

Accounts Payable:		
Supplies and Expenses	$ 1,670.81	
Accrued Salary—Treasurer	1.00	
Federal Withholding and Social Security Taxes	514.92	$ 2,186.73
Deferred Credit to Income:		
Advance Payments by Exhibitors		2,668.50
Contingent Liability to Members on Three Malpractice Suits—$900.00.		
Reserve for Uncollected Dues and Assessments		5,935.00
Reserve for Future Activities:		
Balance January 1, 1951	$59,596.25	
Excess of Income over Expenses for the year 1951, per Exhibit B	17,495.35	77,091.60
		$87,881.83

Exhibit B

Missouri State Medical Association
Income Statement for the Year 1951

Particulars	General Activities	Journal Publication	Total
INCOME			
Dues received (include $1.00 per member annually for the Journal)	$42,752.00	$ 3,273.00	$46,025.00
Assessments	24,760.00		24,760.00
Rentals—Annual session exhibit space	8,850.00		8,850.00
Rent from sub-tenant (office space)	420.00		420.00
Subscriptions to The Journal —Non-members		143.40	143.40
Advertising space—The Journal		21,025.91	21,025.91
Interest on U. S. Savings Bonds	1,375.00		1,375.00
Collection Fees on A. M. A. Dues	744.50		744.50
Bad Debt Recovery	125.00		125.00
Total Income	$79,026.50	$24,442.31	$103,468.81
EXPENSES			
Salary—Executive Secretary	$ 4,966.67	$ 2,483.33	$ 7,450.00
Salary—Treasurer	1.00		1.00
Office Salaries	14,300.95	7,150.47	21,451.42
Employee's Retirement Insurance Premium	927.00		927.00
Office Rent and Light	2,736.94		2,736.94
Postage	1,069.14	474.98	1,544.12
Stationery, Printing and Office Supplies	1,038.36		1,038.36
Directories and Clipping Service	178.45		178.45
The Journal—Paper, Printing, Mailing, etc.		19,869.41	19,869.41
Cash Discounts to Advertisers		11.63	11.63
Commissions on Journal Advertising		1,810.81	1,810.81
Discounts to Exhibitors	30.00		30.00
Telephone and Telegraph	1,783.42		1,783.42
Insurance—General	138.71		138.71
Fees and General Expenses	1,080.14		1,080.14
Taxes—Social Security and Personal Property	290.44		290.44
Traveling Expense — Executive Secretary	871.02		871.02
Traveling Expense—Field Secretary	1,574.88		1,574.88
Traveling Expense—General	23.16		23.16
Committees and Meeting Expenses (Exhibit C)	20,283.04	100.54	20,383.58
Equipment Purchases and Repairs in lieu of Depreciation	71.37		71.37
Legal Expense	2,707.60		2,707.60
Total Expenses	$54,072.29	$31,901.17	$85,973.46
Net Income or (Loss) for the Period	$24,954.21	$(7,458.86)	$17,495.35

Exhibit C

Missouri State Medical Association
Statement of Committee and Meeting Expenses for the Year 1951

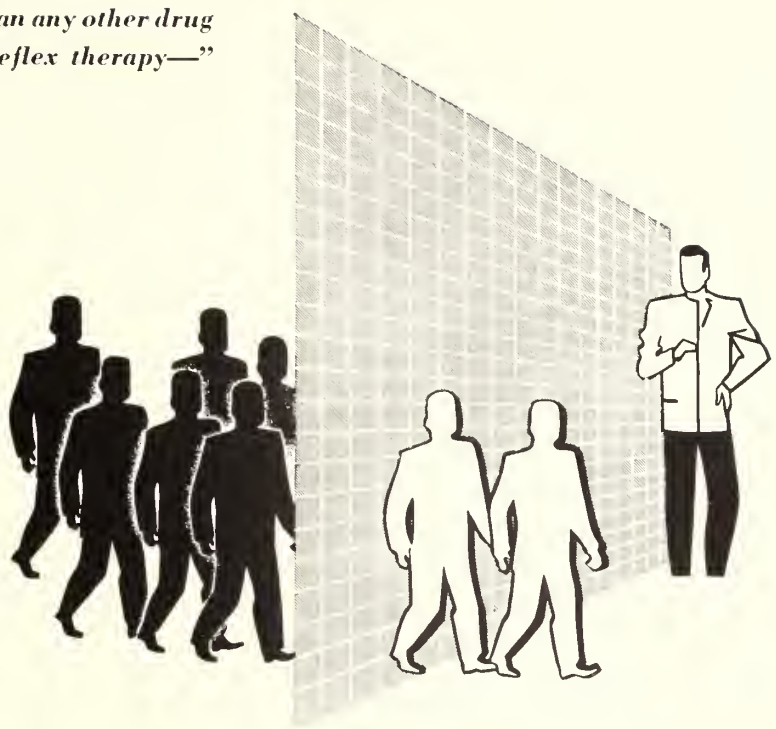
Annual Session		$ 7,172.65
Council Meetings and Councilor's Expenses	$ 2,716 38	
Delegates to A. M. A.	1,604.30	
Women's Auxiliary	644.97	
Procurement and Assignment	104.05	
Committee on Emergency Medical Service	1,220.12	6,289.82
Committees:		
Conservation of Eyesight	$ 488.60	
Rural Medicine	372.25	
Health and Public Instruction	387.06	
Public Policy and Relations	4,146.84	
Scientific and Postgraduate Work	374.18	
Tuberculosis	229 24	
Infant Care	212.77	
Constitution and By-laws	366.09	
Industrial Health	146.56	
Maternal Welfare	39.93	
Mental Health	6.63	
Study of Location	50.42	
Sub-Total	$ 6,820.57	
Publication Committee	100.54	6,921.11
Total		$20,383.58

Exhibit D-1

Missouri State Medical Association
Dues Receivable and Membership by Counties
December 31, 1951

Counties	Membership Total	Active	Junior	Honor	Unpaid Dues 1951 Regular	Special	Prepaid Dues
Andrew	5	5					
Audrain	13	11		2			
Barton-Dade	10	5	2	3		$ 10.00	
Bates	10	9	1				
Benton	3	1		2			$ 15.00
Boone	55	50	3	2		60.00	
Buchanan	97	79	1	17		30.00	
Butler	24	21	1	2			52.50*
Callaway	19	14		5			
Camden	2	2					30.00
Cape Girardeau	44	37	1	6		50.00	
Carter-Shannon	2	2			$ 15.00	10.00	
Cass	15	11	1	3			
Chariton-Macon-Monroe-Randolph	43	30	1	12	15.00		15.00
Clay	39	38		1		40.00	
Clinton	6	3	1	2			
Cole	41	40		1		70.00	110.00
Cooper	15	15			15.00	10.00	
Dallas-Hickory-Polk	9	8		1			120.00

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Antabuse, a new aid for selected intemperate drinkers, is part of the comprehensive and integrated Ralph regimen.

The screening of patients for the treatment requires a psychiatric examination. Also candidates, in our experience, need certain laboratory determinations previous to therapy and during any subsequent trials with alcohol.

The Sanitarium provides complete hospital care of the patient with the special Ralph skills developed in more than fifty years experience in the treatment of alcoholism.

The cooperation of the patient's personal physician is desired to offer the most in bringing the problem drinker from his blind alley into a normal, useful life.

The RALPH Sanitarium

Ralph Emerson Duncan, M.D., Director

529 Highland Avenue KANSAS CITY 6, MO. Phone VIctor 3624

DeKalb	1	1					
Dunklin	28	23	2	3		40.00	247.50
Franklin	27	23	3	1			
Grand River (Caldwell-Livingston-Grundy-Daviess-Carroll-Harrison-Linn-Mercer)	59	46	4	9		50.00	285.00
Greene	128	112	6	10		40.00	
Henry	14	12	1	1		30.00	
Holt	4	3		1			
Howard	7	6	1				
Jackson	684	552	41	91	337.50	980.00	
Jasper	78	61	2	15	15.00	30.00	
Jefferson	16	15	1			30.00	
Johnson	13	11	2		15.00	20.00	
Laclede	13	13				10.00	
Lafayette-Ray	23	19	1	3		10.00	
Lewis-Clark-Scotland	4	4					
Lincoln	5	3		2			
Marion-Ralls	30	23	1	6		10.00	
Miller	3	3					45.00
Mineral Area (St. Francois-Iron-Madison-Washington-Reynolds-St Genevieve)	36	33		3	15.00	50.00	
Mississippi	8	6	1	1			
Moniteau	5	4		1		10.00	
Montgomery	4	4				10.00	
Morgan	4	2	2				
New Madrid	10	9	1		30.00	30.00	
Newton	12	12				20.00	
Nodaway-Atchison-Gentry-Worth	22	20	1	1	15.00	20.00	60.00
North Central (Adair-Schuyler-Knox-Sullivan-Putnam)	18	16		2		40.00	
Ozark (Barry-Lawrence-Stone-Christian-Taney	35	29	2	4			
Pemiscot	15	11	1	3		20.00	
Perry	9	5	2	2			105.00
Pettis	28	25		3		50.00	
Phelps-Crawford Dent-Pulaski	29	24	2	3		60.00	
Pike	12	7	2	3		10.00	
Platte	8	5	2	1			
St. Charles	21	19	1	1			30.00
St. Louis County	298	262	19	17		120.00	60.00*
St. Louis Medical Society	1,300	1,077	137	86	412.50	2,990.00	157.50*
Saline	20	20				30.00	
Scott	15	15					
Shelby	2	1	1				90.00
South Central (Howell-Oregon-Texas-Wright-Douglas)	22	18	1	3		20.00	22.50
Stoddard	6	6				30.00	
Vernon-Cedar	15	14		1		10.00	15.00*
Webster	3	3					45.00
Totals	3.546	2,958	252	33€	$885.00 (A)	$5,050.00 (B)	$1,505.00

(A) Delinquent 1951 dues of members carried at December 31, 1951, at the request of local societies.
(B) Unpaid assessments at December 31, 1951.
(*) New members-payments received from applications in 1951 for memberships effective January 1, 1952.

COUNCILOR DISTRICT NEWS

FIRST COUNCILOR DISTRICT

DONALD M. DOWELL, CHILLICOTHE COUNCILOR

Grand River Medical Society

The December dinner meeting of the Grand River Medical Society was held at the Strand Hotel, Chillicothe, the evening of December 13. The scientific program was presented by Gerald L. Miller, M.D., Kansas City, who gave a most practical discussion on "Obstetrical Emergencies."

A request from the Carroll County Medical Society for hyphenation with the Grand River Medical Society was approved unanimously.

The president, Dr. Fuson, Trenton, announced the program committee for 1952 as Joseph Conrad, M.D., Chillicothe, chairman; John Dixon, M.D., Brookfield, and C. L. Clark, M.D., Trenton.

The next two meetings of the Society were set for January 17 and February 14.

Meeting of January 17

Forty-nine persons, including doctors, their wives and guests, attended a dinner meeting of the Grand River Medical Society at the Strand Hotel, Chillicothe, the evening of January 17.

Following a bountiful dinner, the ladies held a separate meeting with eight guests from the Woman's Auxiliary to the Missouri State Medical Association while the doctors listened to a symposium on "Congestive Heart Disease" sponsored by the St. Louis University School of Medicine in cooperation with the Missouri Division of Health. The speakers on the symposium from St. Louis University were Donald W. Bussman, M.D., who spoke on "Pathogenesis of Congestive Heart Failure"; Harold Franklin, M.D., "Physical Findings and Differential Diagnosis of Congestive Health Failure," and C. G. Vournas, M.D., "Treatment of Congestive Heart Failure."

The after dinner meeting of the women resulted in the organization of a Woman's Auxiliary to the Grand River Medical Society. The guests present from the State Auxiliary who help with the organization were Mrs. W. C. Cheek, Springfield, President of the State Auxiliary; Mrs. Richard Sutter, St. Louis County, President-elect of the State Auxiliary; Mrs. Paul Cole, Springfield; Mrs. C. T. Shepherd, St. Louis County; Mrs. E. E. Wadlow, St. Joseph, first Vice President of the State Auxiliary; Mrs. Manning E. Grimes, St. Joseph; Mrs. Joseph L. Fisher, St. Joseph, and Mrs. H. W. Carle, Jr., St. Joseph.

Following their scientific program, the doctors held a business session and elected delegates to the 1952 Annual Session and discussed other matters of society interest.

E. A. Duffy, M.D., Secretary

James R. McVay, M.D., Kansas City, spoke recently at the Buchanan County Social Welfare Board's annual dinner meeting. He discussed "Voluntary Prepaid Health Insurance."

The spring session of the St. Joseph Clinical Society will meet on April 24 in the Crystal Room, Hotel Robidoux, St. Joseph.

SECOND COUNCILOR DISTRICT

W. F. FRANCKA, HANNIBAL, COUNCILOR

THIRD COUNCILOR DISTRICT

ARMAND D. FRIES, ST. LOUIS, COUNCILOR

Carl F. Vohs, M.D., St. Louis, was a speaker at the second annual County Society Officers' Conference of the Kentucky State Medical Association at Louisville, Kentucky, on February 7. His subject was "The County Society's Relation to Blue Shield."

Frederick A. Jostes, M.D., St. Louis, has been elected first vice president of the Mississippi Valley Medical Society for 1953. Alphonse McMahon, M.D., St. Louis, has been named chairman of the board.

John L. Schlenker, M.D., and Paul T. Hartman, M.D., St. Louis, of the St. Louis State Sanitarium staff, recently passed the examinations of the American Board of Psychiatry and Neurology.

E. Lawrence Keyes, M.D., St. Louis, spoke before the regional meeting of the American College of Surgeons in Dallas on February 4.

FOURTH COUNCILOR DISTRICT

JOHN O'CONNELL, OVERLAND, COUNCILOR

On January 24 a dinner meeting of the Fourth Councilor District was held at the Southern Air, Wentzville. Thirty-five physicians were present to hear a discussion on the issue of a four year medical school for the state and a scientific presentation.

E. Edgar Virden, M.D., Kansas City, President of the Missouri State Medical Association, led the discussion on the medical school issue, explaining the official position of the Association and why it had taken that position.

Carl Moyer, M.D., St. Louis, gave a talk on "Recent Advances in the Supportive Care of Trauma" which elicited a request for more from the speaker on this subject at a later meeting.

ST. LOUIS COUNTY MEDICAL SOCIETY

The St. Louis County Medical Society met at the Sheraton Hotel on January 10 for the installation of new officers. The meeting was called to order by the president, Dr. W. H. Bailey, and on motion the regular order of business was dispensed with.

The meeting was turned over to Dr. John O'Connell who introduced the new officers and guests of the society who were present.

Dr. Bailey spoke briefly thanking the members for their cooperation in the last year.

Oscar P. Hampton, M.D., newly installed president, gave his inaugural address.

The meeting adjourned at 10:30 p. m. and a floor show and dancing followed.

Meeting of January 23

The Society met at the Health Center, St. Louis County Hospital, Clayton, on January 23.

The following by-law was adopted: "Chapter II. Sec. 23. Attendance. Any member who does not attend at least two regular scientific meetings during the calendar year shall not be eligible to hold office in the succeeding year or to vote at the annual election."

A by-law concerning method of elections failed to pass.

Ben Eisman, M.D., St. Louis, spoke on "The Washington University Medical Program in Southeastern Asia."

The following applicants for membership were introduced: Drs. L. Kahn, J. Collins, M. Roblee and P. Miles.

Fifty-six members and guests attended the meeting.

M. A. DIEHR, M.D., Secretary.

FIFTH COUNCILOR DISTRICT

J. F. JOLLEY, MEXICO, COUNCILOR

SIXTH COUNCILOR DISTRICT

ROBERT W. KENNEDY, MARSHALL, COUNCILOR

SEVENTH COUNCILOR DISTRICT

VICTOR B. BUHLER, KANSAS CITY, COUNCILOR

E. Kip Robinson, M.D., and C. Edgar Virden, M.D., Kansas City, were elected medical directors of the Kansas City and Jackson County Chapter of the American Cancer Society at an annual meeting on January 21.

Herbert J. Rinkel, M.D., Kansas City, presented his film "Again to the Sea" at a meeting of the Missouri State Medical Secretaries and Assistants Society on January 27. Also participating in the meeting were Drs. C. Edgar Virden, Ralph E. Duncan and Victor B. Buhler, Kansas City.

EIGHTH COUNCILOR DISTRICT

W. S. SEWELL, SPRINGFIELD, COUNCILOR

NINTH COUNCILOR DISTRICT

E. CLAUDE BOHRER, WEST PLAINS, COUNCILOR

TENTH COUNCILOR DISTRICT

FRANK W. HALL, CAPE GIRARDEAU, COUNCILOR

On Sunday afternoon, February 3, at a meeting at the Sikeston Community Hospital, the SEMO County Medical Society was organized. Mississippi, New Madrid, Scott and Stoddard counties Medical societies were officially hyphenated. Frank W. Hall, M.D., Cape Girardeau, Councilor, presided.

The new Society adopted the name SEMO, meaning South East Missouri County Medical Society. The hyphenated society comprises a membership of approximately forty physicians.

Officers elected were: President, W. J. Ferguson, M.D., Sikeston; vice president, E. C. Rowling, M.D., Charleston; secretary-treasurer, William C. Critchlow, M.D., Sikeston.

WILLIAM C. CRITCHLOW, M.D., Secretary.

CORRESPONDENCE

Obstetrics

JOHN ZAHORSKY, M.D.
STEELVILLE

Emeritus Professor of Pediatrics,
St. Louis University School of Medicine

This is the second of a series of letters to the Editor from Dr. Zahorsky. Others will be carried in future issues of THE JOURNAL.

To the Editor:

The most important branch of medicine for rural practice undoubtedly is obstetrics. No attempt will be made to give any practical obstetric advice, only some general deductions from the statistical evidence are presented.

The maternal death rate is declining steadily in the United States and Canada, indeed, in most of the civilized countries. Even as late as 1933 the ma-

ternal death rate was more than six per thousand births; now it has dropped to one. Missouri has taken advantage of this decline and has proudly announced that the maternal death rate in 1948 was less than one in the whole state. We should not boast however, as the maternal death rate for the west north central states (Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska and Kansas) registered 0.7 only in 1949. The resident urban population in 1948 showed a much lower death rate (0.76) than the rural (1.2).

Ten selected Ozark counties had a maternal death rate of 2.6 per thousand births. The ten selected northern counties were a little better, 2.2 per thousand. The year 1946 gave about the same figures. These figures are based on the resident population, although most of the deaths ocurred outside of the county, presumably in hospitals. Altogether this does not flatter rural obstetrics.

There is another side to this story. While the mother's life has the prime consideration, the baby also must be saved. Here one finds that more babies are saved in rural than in urban districts. I quote the (resident) figures of 1948:

Urban stillbirths 878 (rate 22); rural stillbirths 887 (rate 20) (more births in the rural areas). The stillborn rates for 1946 were, urban 25, rural 22. During the same year Greene County, including Springfield, gave only 16.6 as the stillbirth rate. The Ozark district (ten counties) did not show up so well with 25, but the figure was 30 in 1946. Not so good! Not enough doctors? Now comes the surprise: the northern ten counties registered an average stillbirth rate of 13 in 1948! Plenty of practitioners! The low number for some of the counties is gratifying: Clay County had a 6.5 as their stillborn rate. As a whole, however, the rural area had a smaller number of stillborn babies.

A few other numbers may be instructive: Jackson County 19; Boone County 18; Buchanan County 23; Cape Girardeau 18; and Adair County 16.

In maternal or fetal dystocia, protecting the life of the mother and saving the baby are great obstetric accomplishments.

Fortunately, a natural labor occurs in the great majority of cases and neither work nor worry is demanded. In an obstetric emergency the general practitioner reveals his strength and experience. Should not the physician even in rural isolated districts be equipped to handle the situation? Either the woman must be taken to a hospital where the proper aid can be given or the country physician should have in his car all the instruments and drugs supplied in the obstetric division of a hospital. Why not carry a small tank of oxygen and a portable incubator? I think the younger men so well trained can work it out successfully. The automobile can carry a large paraphenalia.

In another letter, a study of the neonatal mortality will be given. The conclusion was that more babies die in the hospital than in the homes. I believe this is not true of the immediate danger after birth, the occurrence of asphyxia, but it is true on the subsequent days from infections caused by aggregating so many infants in one room and cared for by semi-scientific rules. Dangerous crises occur at intervals in all large hospitals. Statistics to support this statement are not at hand.

I studied the neonatal death rate in the maternity departments of large hospitals and compared it with the rate in smaller hospitals for the year 1948. Obviously, these figures are merely suggestive, not proof. No figures are available from the metropolitan hospitals. Ten counties were selected with one or two hospitals where the annual live births were more than 500. The death rate of neonatal babies average 25, that is five more than the rural rate and two more than the average urban rate. The extremes were 19 and 28.

A study of my standard, ten Ozark Counties, reveals that the average was only 20.5, and the extreme 8 to 42. Leaving out one high number (Crawford County) and substituting another adjoining county (Washington County with 19) changes the neonatal death rate to 18. This surprising number corroborates the impression that hospital obstetric care induces an increase in the neonatal deaths. Opinion is strengthened by the low neonatal deaths of the selected northern counties (rate 17.5). This evaluation should be accepted as an approximation only.

There is no doubt but that expectant mothers prefer hospital service during their accouchement. One can trace this desire throughout the statistical evidence.

Some counties with no hospital service have few births at home. Let me give a few examples for 1948: Andrew County, births at home 31, elsewhere 168; for Atchison County, the numbers are farther apart, 17 to 200; Carter County 48 and 50; Chariton 101 and 131; Clark 39 and 175. Such comparison reveals clearly the maternal drive to a hospital even when it is situated fifty or more miles away. As already mentioned, my home county in 1948 drove eighty-three expectant mothers from 70 to 100 miles to a St. Louis hospital.

Platte Count should have a cross or a star, only six births at home and 265 elsewhere. However, it is surrounded by other counties having a surplus of hospitals.

Does this long trip in an automobile endanger the life of the mother or baby? I think it does. Crawford, Sullivan and Atchison counties support this view. Let me recall that of the five deaths of my Ozark index only one died at home.

There is another feature of hospital service that is not welcome to the pediatrician. Two thirds of the babies sent home are on the bottle. The hospital service, so far, has not promoted or encouraged maternal nursing. Is the death rate of the artifically fed infants higher than the breast fed? I compared the first year death rate of the infants from counties where a hospital served a major part of the population. Here are the rates of the resident infants under 1 year from which the neonatal death rate is substracted: St. Louis City 11.5, Franklin County 14, Crawford County 5.5, Iron County 11, Dent County 4.5, Nodaway County 4, Reynolds County 6, Platte County 14.8. I give these figures from counties selected at random. No conclusion can be drawn, yet in my examination I got the distinct impression that breast feeding is best for the rural babies. However, this opinion is not corroborated from the state statistics. Urban number is 30.5 and the rural 30.3 total deaths during the first year of life.

Altogether obstetrics in the home is just as safe as in the hospital if the obstetrician has had the train-

ing and experience, but the expectant mothers want the hospital service. Having the baby in the hospital is now the fashion. We must provide the hospitals!

The maternity departments of some large hospitals are constantly upset by new experiments. The urge to improve obstetric care has become a menace, if not a scandal. Every few months a change in obstetric technic is proposed. Painless childbirth is advocated by some specialists, even employing a trained anesthetist to give the punctures for caudal anesthesia. The general practitioner in the rural district needs to maintain a defensive attitude.

An adjoining county is worth an inspection, namely, Washington County, population 15,000, practitioners five, (1 to 3,000). The live births in 1948 were 362, eighty of which were born elsewhere (adjoining counties have hospitals). The osteopaths waited on 70 women, leaving 170 for the four M.D.'s. Stillbirths were average (30) and the neonatal has a rural quality (18) with no maternal deaths. Some help may have been obtained from St. Francois and Franklin counties. The pneumonia deaths rated about 40, most of which were diagnosed bronchopneumonia. Strange! Cancer deaths only 60 (state rate 165). Disease of the heart 241 (state rate 360).

Perry County, southeast of Washington County, has about the same population but there are eight practitioners serving the county, six of whom are M.D.'s. Its women, however, like hospital service and 200 of the 395 live births were delivered elsewhere (hospitals?). Osteopaths attended only 22 cases. There were no maternal deaths, still birth rate 28 and neonatal death rate 13. Good record even if the 200 women had to be transported outside of the county. Sadly I relate that these mothers returned with four dead babies. Only one neonatal death was recorded in the county. Altogether the neonatal death rate was only 12.6 (state average 21.4).*

Pediatrics

There is a widespread rumor that the children of the rural districts are underfed. Perhaps this is true in the "slum" district, the families of which do not often consult a doctor. But in my triweekly private clinic such a condition was not manifest. In the 500 children of all ages examined in the two years, only one case of rickets was presented. Not a single case of scurvy was seen. Vitamin A deficiency was sometimes suspected because the child did not get enough milk, but the rural mothers are expert in gathering "greens" and such possible disorders are remedied easily.

The need for cod liver oil except in young infants was not urgent. The Ozark children, outdoors all day, and lightly clad, themselves produce enough vitamin D during the spring, summer and autumn to last all winter.

The advice of the County Health Nurse was heeded and many families obtained concentrated cod liver oil from the state without cost. I saw many fat children but the active, slender type is the most common. In the end these children mature into strong active adults as the army record of several soldiers has verified. A protein deficiency was recorded in many of the children. So many woodchoppers do not like milk and the children do not get it. Sometimes a chicken is killed or the father kills a squirrel or rabbit, but meat, excepting salt pork bought at the store, is not plentiful.

Our county nurse tells about some pitiable families; the principal object of their lives is to have an easy time. The father works only one or two days a week and loafs the rest of the time, while there are plenty of jobs everywhere.

Here I must quote from the article by Dr. H'Doubler *(General Practitioners Digest,* April '5).

"A baby a year, without expense—and each baby ups the allowance some more."

"Can't you see that this is a process of selective breeding—the basis of selection being a lack of personal pride. They desire to go on relief and avoid work and worry. . . .

"Can't you see how this will rapidly multiply?" These parents have many children. Each baby becomes a source of income. The parents will not feed them so it is up to the government. They are on "relief."

Curiously, no great psychiatric problems need to be explored. The children marvelessly adapt themselves to their environment, but the poor family inheritance vitiates their whole lives. Possibly they inherit a lazy disposition.

I tried to answer a few questions.

1. How much laboratory work is needed for diagnosis?

Purposely, except in about a dozen cases, I treated the child after getting the history and making an examination. Several cases were diagnosed presumptively. Personally, I missed the laboratory. Still, the laboratory established by the Missouri Division of Health was not so far away. It is astonishing the number of examinations made for practitioners by that laboratory. Crawford County seemed rather slow in asking for this service, only 330 tests during the fiscal year (1948-1949), while Dent County had 1,221 tests made at the Jefferson City Laboratory.

In private practice, I depended on a personal examination and tested (1) urine for albumin, sugar and pus cells; (2) diarrheal stool—microscopic examination for pus, ova and fat; (3) blood—after the stab note of the blood is viscid or thin, Talquist test. Blood smear: noted the size and staining reaction of the blood cells. After some practice a fairly safe judgment may be drawn as to the number of lymphocytes and granulocytes. So much may be learned by a careful study of a blood smear; (4) bacterial study of pus and secretions from a smear.

The physician is compelled to decide if one or more special tests, for which he has no equipment, are necessary. We have laboratories everywhere now and the Central Laboratories at Jefferson City or Springfield, Sikeston or St. Louis County may be chosen. The automobile age has so shortened the road to these places that the indicated test may be made promptly. Any laboratory service increases the expense and in rural practice economy should be practiced. Still, each physician will be his own guide. Some like surgical operations, others laboratory technic; every one has a major inclination.

Of the 500 cases examined, only eleven children really needed hospitalization: diarrhea of the newborn, one; congenital heart disease, one; poliomyelitis, two; acute bronchopneumonia in an infant, one; lymphatic sarcomatosis, one; large hemangioma of the abdominal wall, one; tonsillectomy, one; surgical operations needed, three.

* Perry County had its own hospital opened last year.

I am opposed to sending young children with infantile paralysis to the hospital. The long trip and the shock to the young child when separated from his mother are injurious.

Rare diseases were encountered sometimes—as acrodynia, muscular dystrophy and otitis interna. All kinds of eruptions are numerous in rural children.

Although I have mentioned some of the statistics, let me again present some figures from the Annual Report of the Department of Health. To the pediatrician the still-births have an interest. Why are so many babies born dead? This is really an obstetric problem, but we look at the figures and wonder. The still births of the state in 1948 numbered nearly 2,000 with a rate of about 21. Now this astounding fact is inferred from the figures: the still births rate of the rural district is less than the urban rate per thousand births; namely rural 19.8, urban 21.6. The number of live births in the country was more than 4,000 greater than in the cities. The statistics show that the principal stillbirths occur in infants at 8 to 9 months gestation.

I asked Dr. Robey, D.O. (he has done the principal obstetric work in Crawford County for several years), what is the cause of this, so many babies die at birth?

He kindly gave me an account of the still births from his own records. The period of 1946 to 1950 was chosen: (1) macerated fetus, syphilitic mother; (2) one of twins, transverse position; (3) prolapse of the cord and the mother refused version; (4) rapid breech birth before the doctor arrived; (5) one unknown cause; (6) premature separation of the placenta.

Some surprises were offered by various counties. Thus Clay County, population 30,000 had a still birth rate of 6.5. The first prize must be given to Vernon County, rate 2.7 (population 27,000). A selected Ozark group of counties show an average rate of 25.2. Not enough physicians? I studied a selected group of North Missouri counties where plenty of practitioners are available. The average still birth rate of the ten counties (1948) was about 14. Plenty of practitioners! The reduction in the number of babies born dead is an individual practitioners problem.

The neonatal deaths are really a pediatric problem, but in rural districts it is the practitioner's task to save the baby after it is born. No doubt premature birth is the biggest causative condition. An improvised warm box may be made easily. These babies do well in the home if some friends and relatives stay on the job and are instructed by the practitioner.

The figures (1948) for the Ozark group are surprisingly favorable—neonatal death rate per thousand births, 20.6. In the same year the Springfield figures of residents was 20.7, while St. Louis City had 22.5. Clay County had only 14, Crawford, regretfully, had 42, but Ripley and Texas counties saved the whole Ozark group, their neonatal deaths 7.5 and 8. The Northern counties do show up well, ten counties had a neonatal death rate of 17.

As mentioned, the urban neonatal death rate is higher than that of the rural, 23 and 20 respectively. The figures throughout the state are fairly uniform, 20 to 28 neonatal death rate. As already mentioned Crawford was distressed by a neonatal death rate of 42. Compare this with the 4.8 rate in Gentry County (one practitioner to 800 population).

Another important phase of this subject is the death rate during the first year of life. Prophylaxis should be strengthened for these little ones. The death rate in the urban and rural areas is about the same, near thirty. It is fair to conclude that so many of these sick babies are sent away from home to some hospital. Often this is a grave mistake. The country practitioner should be an expert in the treatment of young babies in the home. Taking the 8 month old infant to a hospital is depressing to the little one.

Let me compare my selected districts: The Ozark area shows 24 as the death rate during the first year of life, while the figure 26.5 ornaments the Northern area. Why with so many practitioners and a lower death rate should this rate be higher? Oh well, St. Louis City had 31 rate in its resident infants. Crawford County, as previously mentioned, was also high, 46 is the figure. But why should Texas County, births 387, have such a low rate, 8 is the figure. It would be wise to move all our young infants to Texas County. Breast feeding surely is still fashionable in Texas County!

A social and pediatric problem is presented by families in which parents are on relief. The government with its E. M. I. C. and W. R. is actually encouraging idleness and ignorance. Parents with a good family inheritance do not leave a large progeny, but the families on relief are noted for their fecundity. The former large mortality of these children has been effectively erased by modern hygienic methods. The doctor, the nurse and government agencies do their best, but are we not fostering physical and psychologic traits that are undesirable and distructive to the race? A sense of pride and social rectitude is feeble in most of these people.

Do we need pediatricians in the rural districts? I think not, if well trained practitioners are available. Of course, large cities with a population of 25,000 or more should support at least one and children who are a puzzle to the family doctor should be sent to him as such patients can be transported easily for 50 to 100 miles.

Rural Missouri would be benefitted by having about 50 pediatricians scattered throughout the state (1 to 40,000). A few more might locate in St. Joseph. According to the Medical Directory, many pediatricians have already settled in the larger cities. A great number, about 50, practitioners are listed as favoring pediatric practice. I fear that these are really old men. Obstetrics and pediatrics are two vocations that go well together. Why not have some young doctors major in these two medical specialties? One in each county having a population of 10,000 or more would find a lot to do. Let it be essentially a home practice. Rationally, it would be a sign of progress if some one could devise a plan to select about fifty country boys to study medicine and major in obstetrics and pediatrics. The number of still births is too high, and the number of neonatal deaths can be reduced.

We do not need pediatricians in the rural areas, but we ought to have one young practitioner thoroughly trained in infantile prophylaxis for infants. The figure, 2,800, deaths in the State of Missouri for infants less than 1 year old seems unreasonable. In looking over the tabulation of infant deaths in the Missouri Annual Report, one finds that deaths from premature birth and congenital malformations make up the chief part of the rate. Certainly, whooping cough can and will be eliminated. Grippal infections of the respiratory tract are a great menace and enteritis can be prevented.

BOOK REVIEW

EYE MANIFESTATIONS OF INTERNAL DISEASES (Medical Ophthalmology) by I. S. Tassman, M.D., Associate Professor of Ophthalmology, Graduate School of Medicine, University of Pennsylvania, Philadelphia; Attending Surgeon, Wills Eye Hospital, Philadelphia, Pa. With 279 illustrations, including 25 in color. Third Edition. C. V. Mosby Company, St. Louis. 1951. Price $12.00.

This, the third edition of this standard text, should replace its predecessor on the shelf of the general practitioner as well as the internist in order to improve his liaison with the opthalmologist.

Among other valuable additions, the section on glaucoma has been rewritten to incorporate the latest concepts on the diagnosis (which so often should first suggest itself to the family doctor) as well as the subsequent handling of these cases.

The difficulties of the author of such a comprehensive work can only be appreciated if one considers how well he has done in his discussions on recent advances on therapy. His coverage, on the antihistaminics and antibiotics for example, is cautious yet as timely as possible. I sympathize with him in his (no doubt) present feeling of frustration that in a such book just off the press, he has been unable to include any discussion of the use of cortisone and ACTH which have so recently so radically modified medical and ophthalmic therapy.

As a current textbook with reasonable reference-shelf longevity, this appears to be more valuable for the medical student than some of the smaller basic textbooks of ophthalmology. R. D. M.

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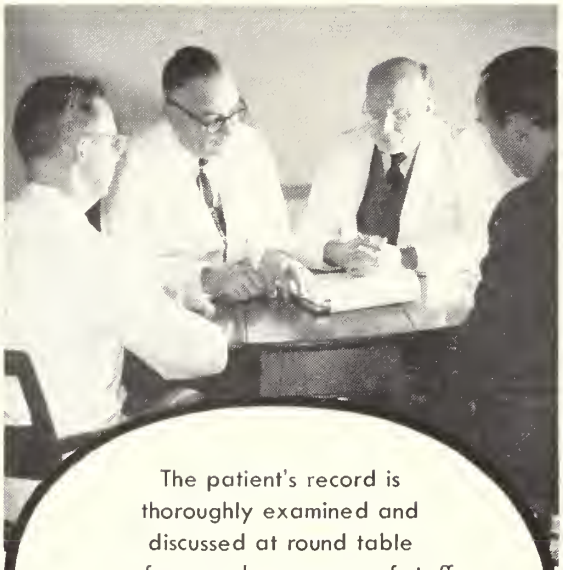
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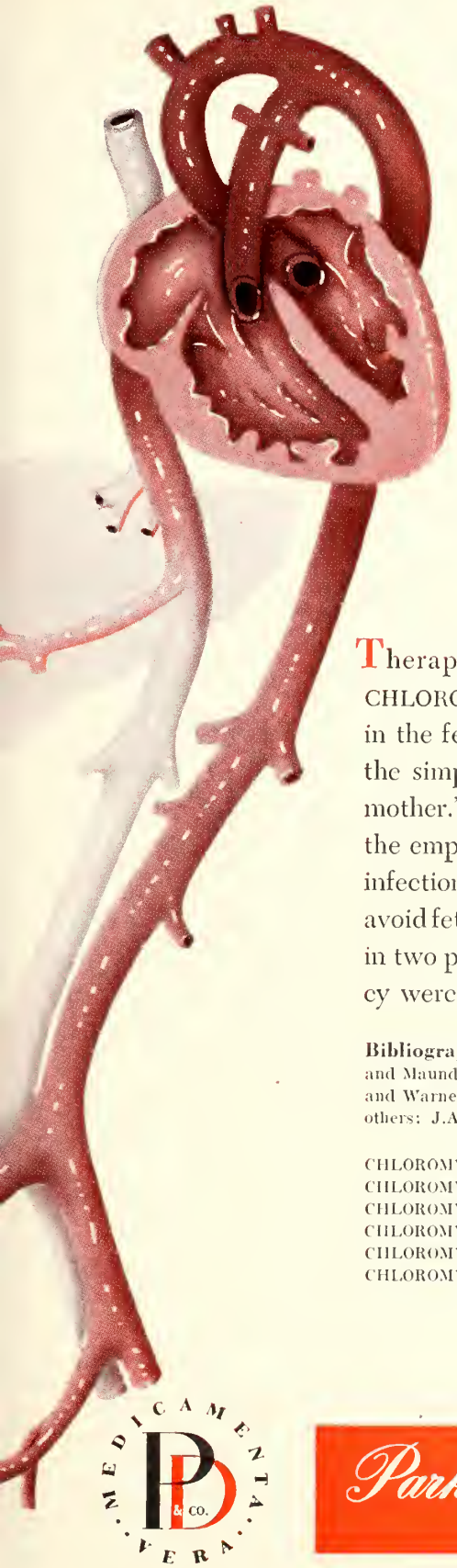
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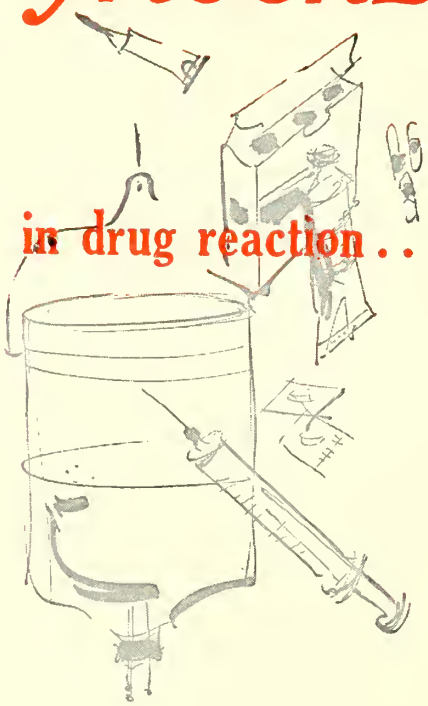
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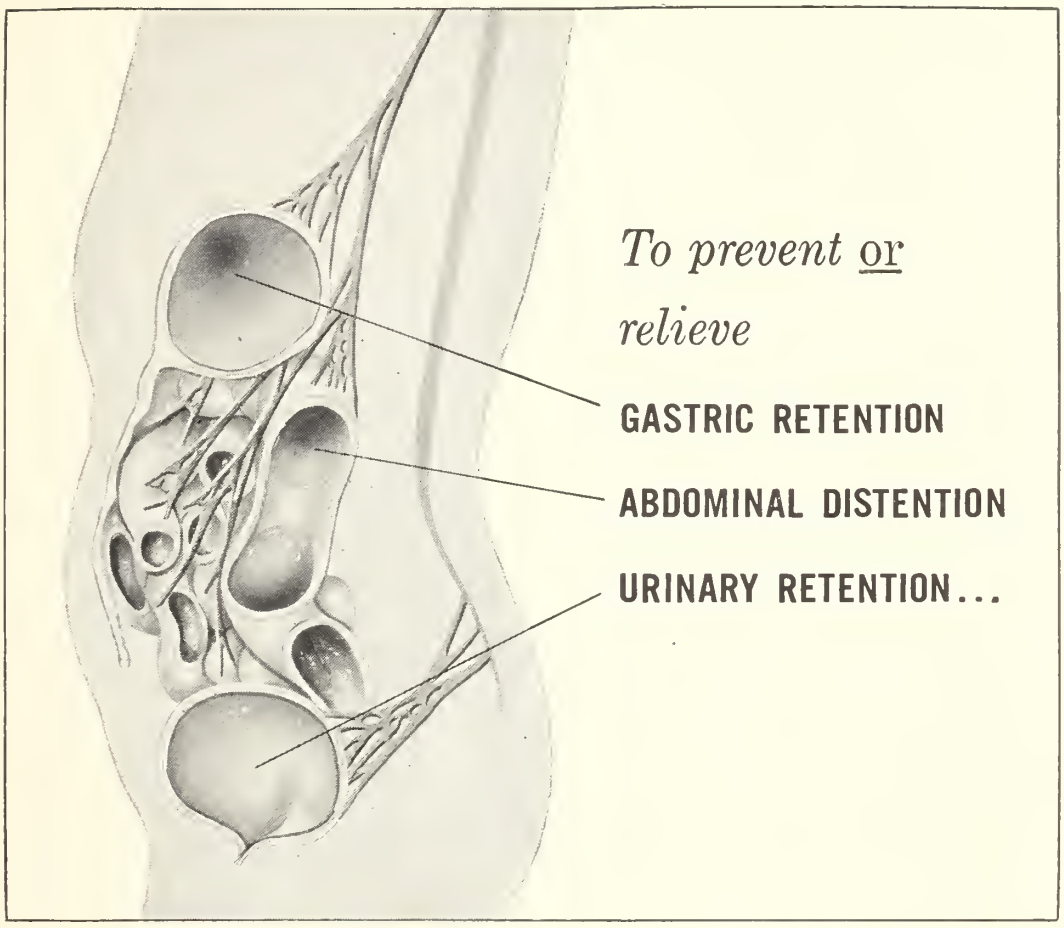
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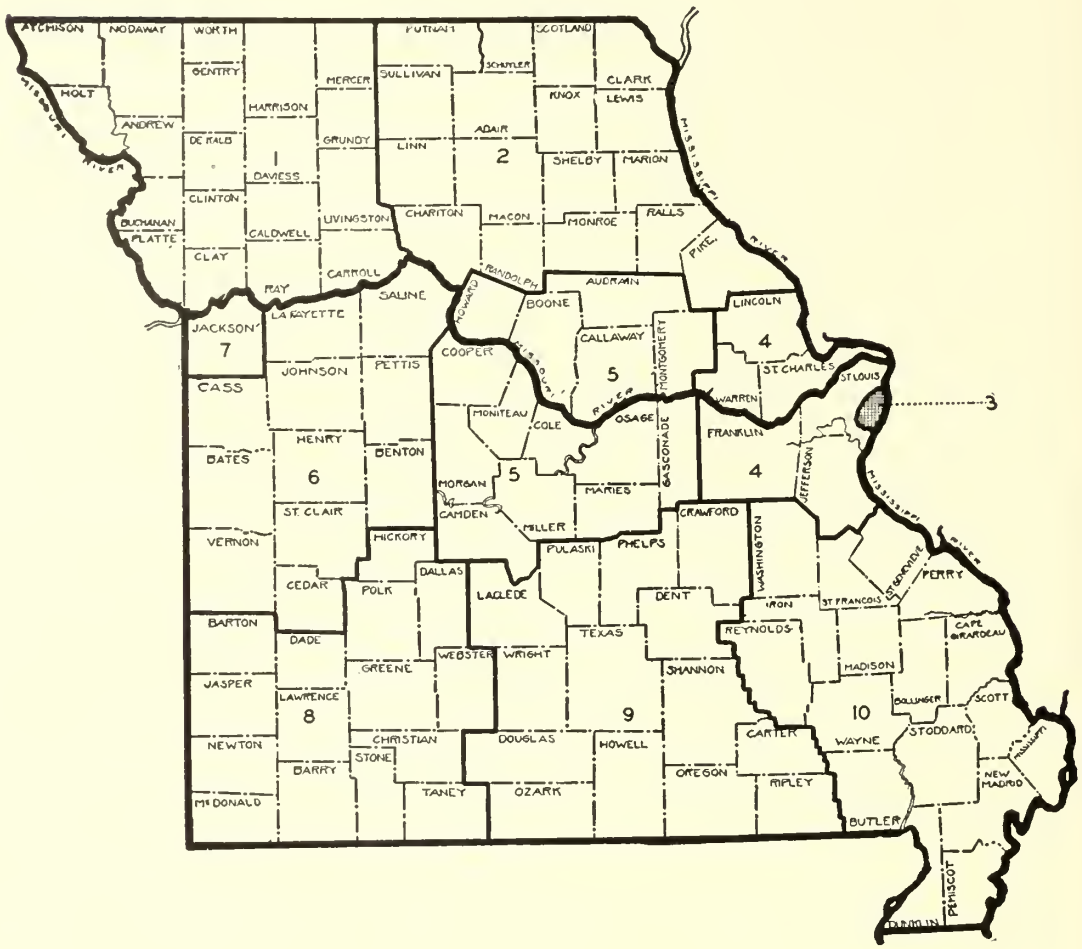
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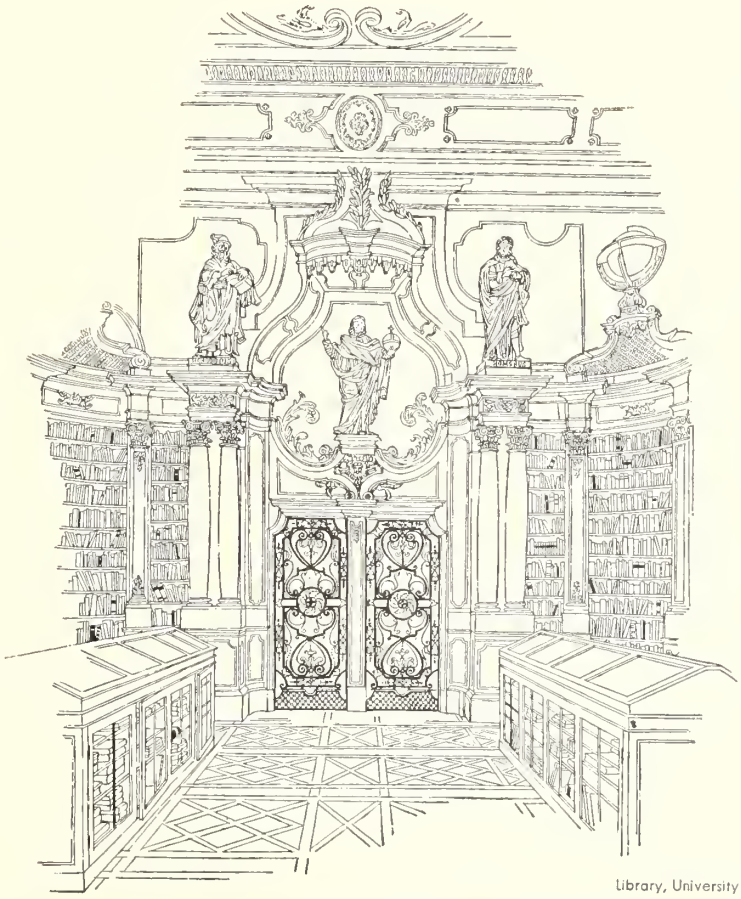
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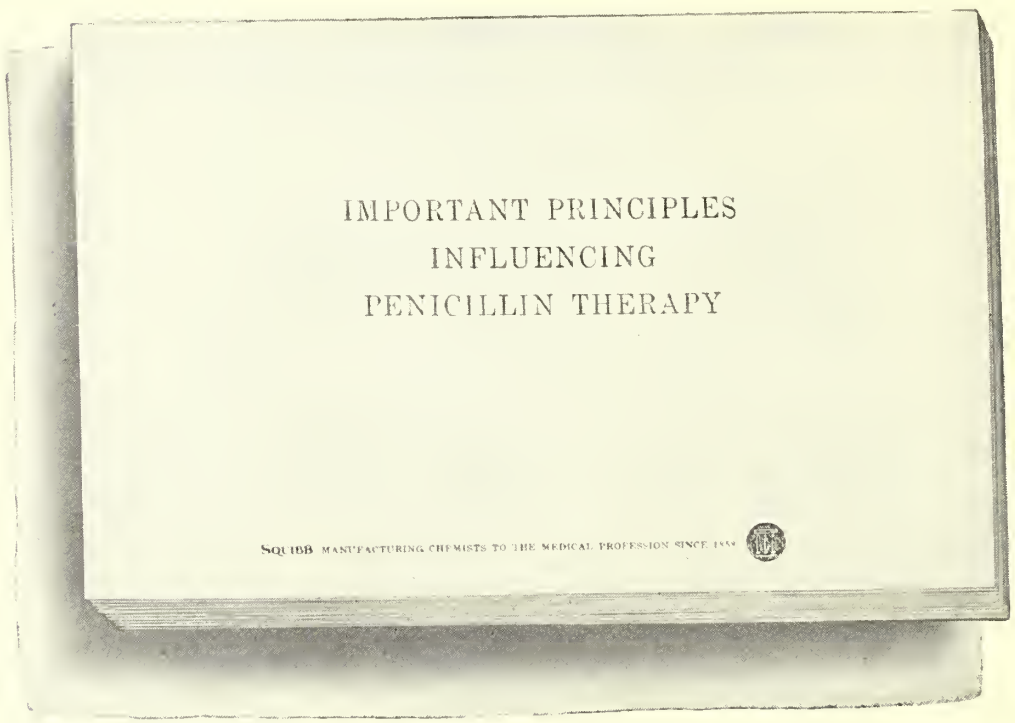
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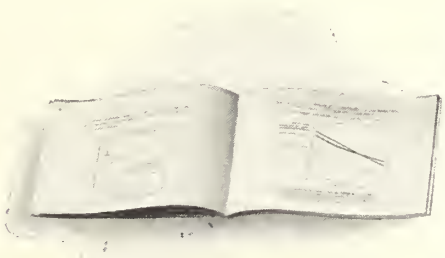
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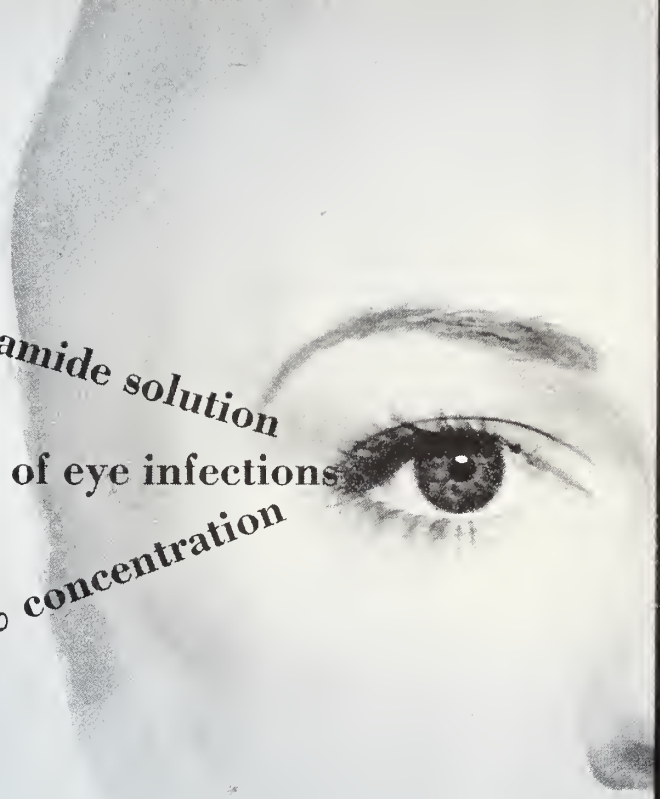
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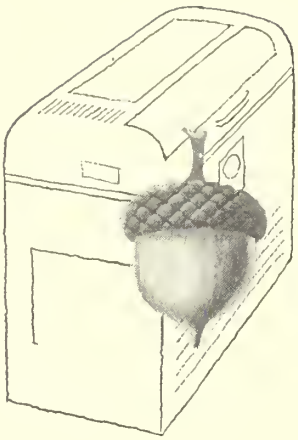
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Volume 49 April, 1952 Number 4

Scientific Articles

ACUTE NEUROTIC SYNDROMES OF COMBAT, NATURE AND MANAGEMENT

LOUIS L. TUREEN, M.D.
ST. LOUIS

In a recent monograph[1] the collective experiences of a group of psychiatrists in the Mediterranean Theatre of World War II contributed to a better understanding of the dynamics and the management of the combat psychiatric casualties. I review some of this material and include some of my own observations and interpretations.

Since the casualties on the front line due to mental disturbances comprised some 11.5 per cent of all battle casualties in North Africa, Sicily and Southern Italy, the role of the psychiatrist and the psychiatrically oriented medical officers in conserving military manpower assumes considerable importance. This is especially true since successful treatment of the combat neurosis depends largely upon the judiciousness of evaluating the presenting symptoms, the promptness of the treatment and the establishment of the principles that only those soldiers retained in the combat area could be successfully rehabilitated for combat.

In the study of three different groups of patients early in the war it became evident that the clinical syndromes of acute combat neurosis are profoundly affected by the manner in which therapy is instituted. A group of thirty-eight patients were evacuated to a general hospital near Oran from Algiers, where they had been hospitalized for a period of several weeks in a British General Hospital. No psychiatrist was available during the initial period of hospitalization.

The area was subjected to nightly bombings, with planes swooping over the hospital area in their attacks upon the city. This group of patients was comprised almost equally of British soldiers, who had previously been subjected to combat in Dunkerque and Dieppe and to the blitz in England, and American troops who were unseasoned in combat. By the time they were examined by a psychiatrist in the rear base section, the symptoms were well fixed and crystallized. These were characterized by marked irritability, insomnia, anxiety, reflex responses to noise, stereotyped terror dreams and nightmares. In 50 per cent of the patients there were motor phenomena such as head and hand tremors, gross dystonia of a Parkinsonism type and ataxia. Neurologic signs consisted of depressed tendon jerks and decreased vibration sense. Gross hysterical symptoms were rarely seen. There were no cases of deafness. In one instance of peripheral nerve lesion, the functional loss extended beyond anatomic neurologic limits. Personality changes characteristic of psychotic regression, depressed state and insubordination were observed. One patient manifested echolalia as his outstanding symptom. While psychosomatic disorders in this group were relatively few, headaches were troublesome, while on the medical wards, patients evacuated at the same time exhibited severe gastrointestinal symptoms, eventually proven to be of a functional nature. In this group of thirty-eight patients, there was a slow amelioration of presenting symptoms but eventually, all of these patients were shipped back to their home countries. Subsequently groups of soldiers similarly evacuated from Algiers after from six to twelve weeks of hospitalization without psychiatric management showed comparable clinical courses.

The second group of patients, sixty-five in number, were received at the base hospital by air evacuation four days after leaving the front. These troops were involved in the defeat at the Kassarine Pass. They were initially assembled at an evacuation hospital without any preliminary psychiatric supervision. The severity of symptoms in this group was less than in the first, but the clinical manifestations were more varied. The incidence of free anxiety was greater and was present in all patients who did not present the

Lecture delivered in a voluntary course on military medicine for house officers at Barnes Hospital, St. Louis, Mo., January 15, 1951.

From the Department of Clinical Psychiatry and Neurology, St. Louis University School of Medicine.

"belle indifference" accompanying major types of conversion hysteria. Hysteria comprised a larger percentage of the cases than I had seen in any other group of patients, and consisted of arms or legs paralyses, astasia-abasia, deafness, aphonia and persistent amnesia. Motor phenomena were otherwise minimal and consisted at most of fine tremors of the extended fingers. Tics and dystonias were not seen. Psychosomatic symptoms were present in each patient with anxiety; headache occurred in practically all. Some cases had backache; an effort syndrome was present in one patient. On the medical wards many patients suffered from functional gastrointestinal symptoms. Personality changes were found in practically every patient. These ranged from the bland unconcern in the hysteria to the irritability and mild insubordination in the others. Most of the patients manifested a "martyr complex" and felt that they had done their duty and should now be relieved of all other suffering. Practically all suffered only a mild noise sensitivity, nowhere near the severity seen in the first group. Those patients made a quick symptomatic response to treatment and only 10 per cent were evacuated to the zone of the interior. The remainder were reclassified for noncombat duty, while three patients were sent back to rejoin their combat units.

The third group of patients were treated in an evacuation hospital within twenty-four hours after leaving the line. The outstanding feature of every case was the profound fatigue and hunger. Free anxiety, uncrystallized into any definite symptom pattern comprised some 90 per cent of the cases. Those subjected to nearby explosions suffered from pains in the back, chest, neck or head, but usually the feelings of weariness and anxiety overshadowed all other complaints. Generally, after the weariness wore off, these pain complaints became louder. In the remaining 10 per cent some disorder of a psychic or hysterical character was to be found. The mental changes consisted of confusion, regression or depression. Some of the regressed patients were catatonic or schizophrenic-like in appearance. Disorientation, laughing or crying, and delirium were present. Reactive depression appeared in commissioned and noncommissioned officers. Hysterical symptoms were deafness, paralysis, amblyopia, amnesia, convulsions. Tremors were virtually nonexistent. One or two patients manifested curious, apparently purposeless tic-like body and head movements, simulating digging with hands and feet and head to make protective coverings for themselves. Several patients vomited and could not take food. Headaches at first were uncommon. Battle dreams and nightmares were rather rare; discipline was good. There was no insubordination. Reactions to planes overhead evoked only mild curiosity but no startle reactions. During the treatment, which consisted of sedation and interviews, it was possible to bring to the surface feelings of self doubt and self recrimination and guilt. A large reservoir of depression was kept in abeyance unless released by abreactive technics. Sixty per cent of these soldiers were restored to their units within five days of entering the evacuation hospital; the remainder, after evacuation to the base hospital, showed few of the symptoms observed in the first two groups of patients, and, for the most part, were retained on noncombat duty in the theatre. It was interesting to note that approximately twenty patients, quarantined in a single tent because of contagious disease and not evacuated promptly, were not given prompt psychiatric attention; these developed symptoms while in quarantine, comparable to those seen in the second group of patients. It became obvious that by the fifth day of hospitalization after removal from the front, symptoms crystallized into fixed and relatively immutable patterns, primarily of a psychosomatic type. A gradual lessening of the anxiety and a repression of the guilt feelings became evident as the physical symptoms gained ascendency.

Emotional responses to the stresses of the combat situation must be regarded as normal; viewed by civilian standards, however, these responses appear pathologic. It is necessary to consider, however, that the intensity of the response is correlated with the intensity of the stimulus of the stress of combat. Ranson,[2] commenting on the normal battle reactions, pointed out that the inexperienced medical officer was apt to misinterpret the significance of these response symptoms; as a result he was too readily inclined to evacuate soldiers either unnecessarily or prematurely. The hazards of combat, accompanied as they are by unaccustomed trials of severe physical fatigue, hunger and lack of sleep produce a series of physical or mental symptoms, which, varying in intensity from soldier to soldier, are nevertheless not necessarily disabling for further duty on the line. Predominant physical responses were those associated with muscular tensions and with autonomic reactions. Among the former are such manifestations as tension headache, tremors, shaking of extremities, transient episodes of immobility. Tremors and jerking movements normally appear only during artillery fire or bombings; generally they promptly cease when the attack lessens or stops. They occur usually when the soldier is immobilized, as in a fox hole during a bombardment. "Freezing" in action, when it is transient and not disabling, is not considered abnormal.

The autonomic responses consist of circulatory, gastrointestinal, respiratory, urinary or diaphoretic manifestations. Tachycardia and palpitation together with breathlessness and thoracic oppression, when accompanied by fatigue and generalized lassitude, may give rise to symptoms of

transient neurocirculatory asthenia. In general, palpitation is a common manifestation and is considered normal. Even under excessive strenuous effort, these symptoms, when accompanied by pains and aches, are indications for rest rather than for evacuation. Transient episodes of giddiness or syncope are not considered inconsistent with continued duty status. Sweating is excessive and recognized by the soldiers as to be expected, in their expression "sweating it out." Anorexia, nausea, vague abdominal distress, diarrhea, urinary frequency are expected responses to fear. Vomiting is not normal unless adequately provoked by odors, particularly of the dead. Incontinence of urine and feces might occur under suitably provocative conditions.

Among psychiatric responses are considered such symptoms as insomnia, noise sensitivity and withdrawal of interest. Within certain limits they are considered normal to the situation, particularly when they subside when the military action is over. But if they persist in a rest period, or become disproportionately severe, or are incapacitating, then they indicate the development of the neurotic syndrome.

The real test for illness is the soldier's incapacity to function. Sobel[3] measured the need for evacuation by (1) accessibility, (2) physical fatigue, (3) willingness to return to duty and (4) the tactical situation. Accessibility made the soldier receptive to interpretation of his symptoms; he could accept the fact that he needed to live with them, since he could not be relieved. Conversely, the inaccessible soldier required more intensive treatment than offered by exhortation; he required evacuation to a base section. The severely exhausted soldier responded miraculously at times to rest; this might have been just a few hours, or over night at the battalion aid station or in the kitchen area. It was observed that when fatigued soldiers were evacuated, the full blown picture of combat neurosis developed in the base section hospitals. The unwilling soldier was treated in the battalion area; when a sick soldier insisted on staying on the line, he presented the surgeon with the need to examine him more carefully as a potential psychiatric casualty.

The battalion surgeon's decision was frequently determined by the tactical situation. When conditions permitted he could rest at the aid station over night before rejoining his unit. Or if it is known that his unit would be relieved shortly from the line, he was sent back to it, to rest with his organization. Unquestionably the mental status of the battalion surgeon himself enters into his decisions. If he himself were already unduly affected by his own situation, he could become unduly sympathetic or unduly harsh with the complaining soldier. Sobel listed the indications for evacuation to the rear of the battalion aid station as follows: psychoses; severe anxiety states manifested by panic and intense emotional instability; and severe manifestations of hysteria, such as paralysis, fugues, or complete amnesia.

These observations established the basis for the program subsequently adapted for the treatment of the psychiatric casualty. Other studies gave some validity to the theoretic considerations underlying this program. During the campaigns in the Mediterranean Theatre and in Southern France I undertook a program of research in an attempt to estimate the incidence of overt anxiety in large groups of effective soldiers, and to measure the level of morale of the members of each group. This was done by adapting the Cornell Selectee Index Tests to the situation.[4] Questionnaires were submitted to some 5,000 individuals in their units. These units had each experienced differing military and combat situations which were correlated with the individual's responses to the questionnaires. Standard of scoring the responses were arbitrarily chosen in such a way that a positive response for overt anxiety was equivalent to the kind of response which, if made by an inductee, would have eliminated the inductee from military service. By this standard, 60 per cent of effective combat infantry troops manifested overt anxiety. Similarly, the self-evaluation score of the test was taken as an index of the individual's morale. By this measure, the level of morale was high in the effective infantryman. It would seem that the overt anxiety, a normal concomitant of the combat situation, could be held in check when the morale factor was high. Conversely, deterioration of morale, from no matter what cause, mobilizes the anxiety into pathologic symptoms of the combat neurosis. The striking fact of this study is that whereas the incidence of anxiety is almost the same in the combat troops and in a group of hospitalized psychiatric patients, the morale factor differs considerably. The level of morale in the psychiatric group is profoundly lowered. It is interesting to note that in a group of hospitalized nonpsychiatric patients, with severe physical disabilities, the group morale is badly deteriorated despite the low level of overt anxiety manifested.

Evidently every study of the war neurosis establishes the importance of the morale factor in the production of the clinical syndromes. A few simple correlations will suffice here. The relationship between the type of unit command and the incidence of psychiatric casualties has been repeatedly noted. Important also is the tactical situation. Advancing, successful troops hold up better than defeated or retreating troops. The importance of identification with groups becomes increasingly evident in the isolation of the new replacement, or of the insulated personality.

Several other factors bear consideration: The role of fatigue, which has already been men-

tioned, and that of concussion of blast, which in the last war gave rise to the term "shell shock." Unquestionably all soldiers in combat become fatigued, with little sleep and poor food for days, under unbearable physical conditions. These patients, rested for a few days, regain their composure and are easily restored to duty. But when they are evacuated to the comparative luxury of a hospital bed, far beyond the lines and out of the danger zone, resistance to the return to the battle conditions is reinforced by the development of anxiety symptoms and the clinical picture of combat neurosis develops in full. This was a common experience early in the African Campaign. Patients were sent back to Oran from Tunesia with original symptoms of fatigue only. Nevertheless, in the rear zone these patients became as incapacitated from neurotic symptoms as those who were initially evacuated with combat neurosis. When the policy was established to rest these soldiers in the combat zone, practically all were restored to duty after a short rest. The fact of fatigue in participating in the breakdown in many instances must be considered as another resistance lowering condition which, in a borderline case, allows the break through of free anxiety. With regard to concussion, evident instances of true blast effect were rare. There were a number of patients with physical effects of blast, such as ruptured ear drums. A study of a group of these patients revealed them to be singularly free from overt neurotic symptoms.[5]

Careful investigation of the facts surrounding the cases of these soldiers who claimed that the breakdown was precipitated by blast, failed to reveal any of the usual physical, neurologic and electroencephalographic findings in blast cases.[6] Instances of loss of consciousness were usually proven to be due to psychic causes rather than neurologic effects. In these patients, the explosion acted like a trigger mechanism, comparable to that in many a civilian traumatic experience in which the patient is robbed of his sense of control over himself and permits the precipitation of the free anxiety, or the crystallization of protective symptom complexes.

One further factor is to be considered. The war wounded was singularly free of any signs of anxiety, particularly the severely wounded. But with recovery and the approach of the date of return to duty, anxiety was mobilized. In North Africa, of 1,000 patients consecutively admitted to a convalescent hospital prior to returning to full duty with their units, 20 per cent developed sufficiently severe phychiatric symptoms to warrant reclassification to limited duty.[7] Recognizing that differing interpretations of the dynamics of the war neuroses have been advanced, for present purposes there are many facts to support the following, perhaps oversimplified, formulation: Anxiety of a conscious measure is present in all soldiers. Its intensity mounts with progressive military situations and when measured by civilian standards, reaches a pathologic degree. In spite of this, conditioning, training, indoctrination and adaptation make it possible for the soldier to function adequately for the military requirements. With the progressive demands upon the soldier there is a progressive impairment of the morale of the individual. Some situations make more severe demands than others. A point is reached at which the soldier is unable to control the anxiety any longer. At this point the soldier becomes unable to function because of the development of a variety of symptoms, primarily psychomotor, or motor. Insomnia, anorexia, tremor appear first, followed by simply "freezing" or by mild fugue states, hysterical paralysis or personality regressions. Any of these early symptoms may be modified by prompt brief sedation, rest, food and removal from the immediate battle scene. The early hysterical symptoms usually responded totally to early treatment although in such instances patients became thereafter still unfit for further combat. The anxiety states, with their physiologic concomitants, were readily controlled. Psychotherapy, utilizing the nascent guilt feelings of failure and disloyalty, was able to turn the direction of the morale and restore adequate control of the anxiety. The theme of the therapy was one of inspiring the patient to remain on duty. In this way, more than 60 per cent of the combat casualties were restored to combat duty. On the other hand, when the period of amorphous symptoms were allowed to pass without treatment, the patient developed mechanisms for controlling his anxiety. By developing a symptom complex he was enabled to permit a rationalization of his failures and to mobilize the determination to escape the combat situation. Return to duty became out of the question for the soldier when he developed psychosomatic symptoms and reaction formations. Paranoid, hostile, irritable personality structures replaced the self-accusatory and depressed behavior patterns present in the early stages. Unquestionably, in soldiers who were quite sick there was merging of the war neurosis with preexisting personality disorders which episode may have been well or ill concealed. In these instances infantile conflicts, sibling rivalries, cedipus complexes, dependency needs, separation fears and other problems were revived and entered into the clinical features of the developing war neurosis. These were the most difficult patients to manage and were represented by the depressed states, the regressed catatonic and schizophrenic behaviors, and the obsessive-compulsive personalities which were treated.

A program of management of acute combat neurosis was developed in the 5th and 7th armies which aimed at continual sorting and treating of these casualties from battalion aid station to

the psychiatric base section hospital. Those who could be rested adequately or treated in the battalion or regimental area were retained there. The remainder were treated at the army psychiatric center for a period of from three to five days. About 60 per cent of these could be sent back to their units; the remainder were evacuated to the rear. Treatment in the army psychiatric center consisted primarily of rest and sedation. Narcosynthesis, when used, was reserved usually for the more seriously disturbed soldier, who was eventually evacuated none-the-less.

The base section psychiatric hospital was originally organized to receive patients originating in the army ground forces in order that most battle induced neurosis reaching base sections might be cleared through a unit prepared to handle them. Whenever the base section was close to the fighting front, this function was realized; when the front was relatively inactive, the hospital received the entire range of psychiatric patients appearing in base sections or garrison units.

In this lecture I shall discuss only the clinical features and the management of the acute combat induced neuroses. These cases were so designated if the symptoms developed in or immediately after combat or if the condition were directly attributable to combat. These criteria excluded some patients who should have been included since it was difficult to evaluate the role of combat in causing illness of patients whose symptoms developed in a rest period or were precipitated by some intercurrent illness or accident. Unquestionably similar dynamic factors were involved in many of these cases as in those developing on the battle field. In many of such patients anxiety and tension had been present or mounting since the combat experience. On the other hand, our definition included all patients in whom combat precipitated symptoms aggravated a perexisting neurotic syndrome. This arbitrary classification did, however, serve to designate for statistical purposes the number of men lost from the front as a direct result of psychiatric illness.

Acute types were represented by patients arriving at the base section hospital three to five days after evacuation from the front. They comprised 88 per cent of the admissions to the base section phychiatric hospitals in advanced base sections. Patients with acute anxiety states accounted for 75 per cent, manifested predominately by free anxiety; 2.5 per cent were diagnosed as conversion hysteria; the remainder showed a mixture of symptoms, of which anxiety was the most pronounced, but to which were added hysterical, hypochondriacal, depressive or obsessive reactions. On the whole the symptoms were mild and responsive to therapy. The average period of hospitalization was eleven days. In this group morale, cooperation and eagerness to return to some form of duty were good. The disposition of these cases were as follows: return to combat duty, 1 per cent; reassignment to limited duty in the theatre 96.5 per cent; evacuation to the zone of the interior 2.5 per cent.

ANXIETY STATES

In the North African campaign, the clinical findings of acute anxiety cases, which have already been described, differed markedly from those seen in the Sicilian and Italian Campaigns. The overt evidences of anxiety in patients from the Sicilian and Italian and French campaign were generally less severe than those seen in the Tunesian Campaign. The findings were relatively benign. Since only the most severely neurotic patients were evacuated from the front and eventually reached the base section psychiatric hospital for treatment, these differences in the clinical findings were all the more remarkable. In part they were accounted for by the altered conditions of the campaign, where our troops were victorious; but on the other hand the trials of Cassino and Anzo were as severe as those in Southern Tunesia. In the former case, however, the troops were seasoned. In addition the factor of early psychiatric treatment cannot be emphasized too strongly. Patients who could no longer function in combat were rapidly evacuated through psychiatric channels under continuous expert treatment. By the time these patients reached the forward army psychiatric units or the base section psychiatric hospital, the most severe symptoms had been eliminated and more serious complications were avoided. Free anxiety, the outstanding symptom, was manifested by tension and tremulousness of a relatively mild degree. Coarse tremors were rare; headaches, startle reactions and irritability were infrequent. Battle dreams and insomnia were the most common complaints. Most of the patients appeared moderately tired and desirous of rest. The exceptional patients with jerky or even Parkinsonian tremors were free from these symptoms after twenty-four hours of sedative wet packs.

All of these patients adjusted quickly to the routine of activities and were appreciative of everything done for them. Sedatives were not required. They improved rapidly and within a few days were usually completely symptom free and ready for noncombat duty. Unlike the several weeks required in the early series, the usual period of hospitalization in the majority of cases was seven days.

CONVERSION HYSTERIA

These patients were notable for their lack of visible anxiety, exhibiting the "belle indifference" characteristic of hysteria. From most of them history of a fugue episode, acute panic reaction or transient period of amnesia on the battle field was easily elicited. Subsequently,

various forms of motor disturbance had been present including monoplegia, astasia-abasia and transient weakness. There were also some instances of auditory, visual and speech defects and, more rarely, a persistent amnesia. In contrast to the situation in the North African Campaign, patients of this group were generally free of their major conversion symptoms by the time they reached the base section phychiatric hospital. (It is interesting to note that in a group of German prisoners of war treated in a base hospital at Marseilles, the majority of neurotic symptoms were those of the major conversion hysteria types). Gastrointestinal symptoms and somatic symptoms referable to the injured regions or organs were more persistent. The group of conversion hysterias were less responsive to treatment by hypnosis and suggestion, but the majority could be assigned to limited duty after a brief period of hospitalization.

Other types included the following: (1) Anxiety hysteria, by which was meant the presence of dissociative conversion symptoms, but accompanied by evidences of overt anxiety. Neither the hysteria nor the anxiety were as severe as in the two groups just described. History of panic as the precipitating event in most instances could be elicited. Transient fugues and amnesias occurred simultaneously. Some of these patients showed pronounced neurocirculatory symptoms. This group of patients comprised 9 per cent of the acute combat cases. (2) Reactive depression occurred in 0.7 per cent of the acute cases. In early stages of the anxiety states, however, guilt feelings and reactive depression centering about the soldier's inability to remain in combat were prominent symptoms, particularly evident in commissioned and noncommissioned officers with a long period of good service. Men with marked reactive depressions were inclined to be suicidal and were the least responsive to psychotherapy of any group. The prognosis was usually poor unless electroshock therapy was employed. Differential diagnosis from psychotic depressions were established on the basis of dynamic material elicited by narcoanaylsis. (3) In this group no nosologic designation was possible. No fixed patterns of symptoms occurred. Most of these gave a history of neurotic symptoms in civil life which had been reactivated and aggravated by combat experience. The chief symptoms were hypochondriacal. There were severe somatic complaints, gastrointestinal difficulties, headache, backache, arthralyias or any combination of these symptoms, together with variable degrees of phobias, tensions, anxiety, depression and emotional instability. They comprised 12.8 per cent of the group of acute cases. They were resistent to therapy but were generally able to perform noncombat duty after a period of hospitalization.

The requirements and purposes of individual therapy in the base section hospital was the preparation of the soldier for duty on as high a plane of effectiveness as possible.[8] All other goals could be subordinated to this one. Attempts to treat the military patient by the usual civilian standards were not only time consuming but futile as well. The psychiatrist was required to interview, diagnose and treat the average psychiatric patient all in a period of from twenty to thirty minutes. An unusual therapeutic situation existed in the peculiar military relationship between him and the patient, of which both doctor and patient were evermindful, and the technics, aims and methods were all oriented to military, not to personal needs.

The initial interview was the basic instrument by which the psychiatrist accomplished all that was possible. In this period he must estimate the patient's basic personality, and his presenting illness; a reasonably thorough physical examination was required to assure the patient of his interest and competence. He presented himself to the patient with a military bearing, yet with a sympathetic and understanding attitude, and thorough and scientific conduct of the examination. In this way the patient was made to feel that he had found someone, even though an officer, who understood him and to whom he could express himself naturally and with little restraint, and would try to help him.

The physical examination was brief and systematic. It was directed more toward the detection of common disabling diseases or somatic manifestations of anxiety than toward the searching out of relatively common chronic diseases. The same approach was necessary in the laboratory procedures. It was not wise to subject the patient to too many and too involved tests which all to frequently served to fix his symptoms on one organ or another. The diagnosis of the neurosis was made by the study of the patient's personality and the nature of his symptoms, and it was usually possible to establish quite accurately which of his symptoms resulted from the neurosis.

The more purely therapeutic portion of the interview took place at the close of the session, usually in a period of from ten to fifteen minutes. An early estimation of the probable disposition of the case was made and, as a general rule, it was considered desirable to inform the patient of the disposition at as early a date as possible. This procedure, giving the patient an immediate sense of security, if only because the decision is something fixed and definite, lay the bases for further therapy. It established a better rapport with the physician and allowed a better approach for the removal of symptoms. The decision was often received with gratitude by the patient even if it were the one he did not consciously desire, so strong were his fears of the unknown, his dislikes of the uncertain and his desire to be commanded and led. These neurotic traits of the

patient were useful to the psychiatrist, and needed to be exploited.

Attempts at prolonged therapy, intended to return the neurotic soldier to duties of which he was not capable, had several undesirable results. Symptoms became worse and new ones appeared as anxiety became intolerable. Concomitantly, conscious hostility appeared as the result of anxiety and, in turn, reinforced it. Under these conditions all attempts at therapy failed, making it impossible to reclaim these soldiers even for limited duty. Any prolonged hospitalization not only became a dead loss to the army but had a deleterious effect on the patient's potentiality for recovery. The emphasis was on quick restoration to duty.

With the establishment of a basis of security for the patient in the knowledge of his fate, he was prepared for the future. The language used, the depth of explanation and the precise approach depended upon the patient's intelligence, his basic attitudes, his degree of insight and the severity of his neurosis, as well as the degree of responsibility facing him as a result of the disposition made of his case. Officers and noncommissioned officers returning to a position of command required a thorough explanation. All patients needed to know certain basic facts: that their symptoms were psychogenic and arose from certain situations or personality difficulties or both, that there were no important somatic disorders and that they were capable of performing certain duties.

Reassurance and optimism were advisable when justified by the facts. Although it was advantageous to tell the patient he would get better and that he had suffered no permanent impairment of his ability to live happily, it was unwise to depart from the known facts about neurosis. It was wrong to tell a patient there was nothing wrong with him or that it was his "imagination," when he sensed that there was something seriously wrong. This only tended to decrease his confidence. Guilt feelings were seriously disabling unless successfully combatted. He required strong assurance that he was not in disgrace and that his removal from combat served a useful purpose for the army and that he would be assigned to a useful job.

The final step in active therapy was exhortation. The soldier with battle neurosis was discouraged and disgusted or hostile as well. Morale was low; cynical attitude and confused thinking about the war was present. They resulted from and predisposed to the neurosis. These factors were combatted by an extension of the psychiatrists' own attitudes. A proper orientation of the physician himself was required. It was found that orientation of the patient could be done better in groups.

The four major methods of active individual therapy were, therefore, disposition, explanation, reassurance and exhortation. All were effective with these patients, most of whom went to noncombat duty. For the average patient there was neither time nor need for further formal therapy. Abreaction is not included because it usually constituted part of the history taking period. For occasional patients it was an important and useful method. Mild suggestion, combined with reassurance, had some value, but any considerable degree was avoided except with hysterical patients. Free association was too time consuming to be practical. The psychiatrist allowed the patient free play in recounting his illness. In cases in which a relatively active technic was unsuccessful hypnosis or hypnotic drugs were used. In the initial interview the patient was allowed to be as spontaneous as possible and the psychiatrist directed the interview as passively as he could. Limitations of time modified the possibilities in this respect.

Gross hysterical symptoms, particularly disabling sensorimotor phenomena, presented an emergency and were treated actively and intensively. Primarily, attempt was made to clear the symptoms up and then the basic anxiety was treated as in the typical anxiety state. A few hysterical symptoms could be removed in a simple interview by suggestion and reassurance alone, but most hysterical patients who reached the real echelon required more strenuous measures. Anxiety states, in patients with chronic personality disorders, and associated with depression, compulsive traits and certain antisocial or schizoid phenomena, required repeated interviews, largely for the sake of keeping the patient reasonably comfortable and happy. Immediately notifying the patient of his disposition was likely to be helpful.

Brief reference is made to some of the specific technics of treatment employed at the base section psychiatric hospital, and indications for their use: (1) Hydrotherapy, consisting of wet sheet packs, were effective in early stages of the combat neruoses, particularly in agitated and tremulous patients. They were not useful in the chronic phases of the disease. (2) Abreaction, either during the history taking interview, or during narcoanalysis, was desirable. Under narcoanalysis, conversion symptoms responded promptly. However, its value in the anxiety states was much less certain. Narcoanalysis was effected through the use of either sodium amytal or pentothal sodium. Hypnotism was found to be equally effective in producing abreactions. (3) Chemotherapy: Sedatives were ineffective in treating insomnia and irritability in the more chronic neuroses, and their effects were often pernicious. Though sedatives had a definite but limited place in the treatment of the acute neuroses in the forward areas, the drugs could be discarded entirely as a routine measure in the rear areas. (4) Electroshock therapy was useful

in reestablishing contact in severely disturbed anxiety cases who presented the clinical picture of pseudopsychosis. Some gross hysterical symptoms disappeared after one or two shocks. (5) Group therapy was conducted both on an orientation basis for the entire hospital population and as group phychotherapy for smaller groups. In addition, a program of task assignments in the hospital and recreational and physical rehabilitation activities utilized the major portion of the patients' days in the hospital.

SUMMARY

The clinical description of the syndromes of the combat neuroses lends support to the role played by early and adequate treatment in modifying the course of the various syndromes. Amorphous manifestations of anxiety, if untreated-quickly become fixed patterns of somatic and personality disorders. Conversely the released anxiety could be contained and the soldier returned to combat duty in 60 per cent of the cases within five days of the onset of symptoms, if sedation, rest and appropriate psychotherapy were promptly instituted.

Anxiety, pathologic in degree when measured by civilian standards, was found in practically all effective combat troops. Kept under adequate control until influenced by morale lowering factors, disabling neruotic symptoms appeared only when anxiety became overwhelming. Basic personality patterns colored the character of the neurotic syndrome.

Psychotherapy after the earliest phases of the illness aimed at prompt disposition, explanation, reassurance and exhortation. Additional technics in suitable cases included hydrotherapy, narcoanalysis, hypnosis, electroshock therapy and group therapy. Hospitalization was brief. The majority of soldiers with combat neurosis could be retained in the theater of operations for some form of duty.

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INDUCED HYPOTENSION IN SURGERY OF INTRACRANIAL VASCULAR ANOMALIES

REPORT OF 2 CASES

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Congenital cerebral aneurysm is the most common etiology of spontaneous subarachnoid hemorrhage in young individuals. Brain tumors, arteriosclerosis and hypertension are less commonly observed causes. During the last five years the use of cerebral angiography has become increasingly frequent in searching out the cause of spontaneous subarachnoid bleeding. This technic was introduced by Egas Moniz[1] of Lisbon, Portugal, in about 1926 and was immediately widely adopted in both Europe and South America. In this country the exploration of the cerebral vascular tree and its anomalies by this method is now coming into widespread use both in people with spontaneous and traumatic intracranial hemorrhage and for the investigation of suspected brain tumors. With the increasing use of cerebral angiography, such patients are now being subjected to a rational method of approach by attacking the cause of the hemorrhage either directly by intracranial approach or indirectly by ligation of a suitable member of the vascular tree supplying the area in question. As Poppen[2] has stated, there are common locations for aneurysms about the circle of Willis and in the branches leading therefrom. Certain aneurysms such as those at the bifurcation of the anterior and middle cerebral arteries have been shown to be almost impossible to approach directly. For this reason a good many of these patients are subjected to ligation of the common carotid and later of the internal carotid in the neck. Such ligations are not without danger, both as to resulting hemiplegia and to subsequent mortality. Obviously, if the lesion can be approached with reasonable security and the aneurysm obliterated, then that is the treatment of choice. The problem is to know which lesions can be approached and which cannot. Once a course of action is decided upon and one is committed, there is no recourse. In seeking some method of making the direct approach to intracranial aneurysms a little less hazardous, we noted the use of total spinal anesthesia by Swanson[3] and coworkers in Atlanta in the excision of a large arterio-venous aneurysm. Their patient was given a spinal anesthetic, placed in Trendelenburg position and the aneurysm removed using artificial respiration with a gas machine and an endotracheal tube. At the end of the procedure the patient was given a transfusion and the head was elevated and artificial respiration was continued

until the patient breathed spontaneously. This seemed somewhat radical to us, although the result was a good one. So, we decided on an attempt to lower the blood pressure at the time of the exposure of the intracranial vascular lesion and, at the same time, keep control of the blood pressure as much as possible. We felt that this could be done by one of two ways: either by repeated removal of blood from the vascular tree as Gardner[1] and his coworkers of Cleveland have done, or some modification of Swanson's method of total spinal anesthesia. Accordingly, two patients were treated as follows.

REPORT OF CASES

Case 1. Mrs. D. B., aged 22, referred by Walter Tillman, M.D., Springfield, Missouri, was admitted with the chief complaint of headache and vomiting for a period of two days. She had her first attack of severe headache five days before admission, which had lasted for two days. Forty-eight hours before admission, the patient began having severe headaches over the vertex bilaterally, associated with vomiting. At that time she fainted. It is not known how long she was unconscious. A lumbar puncture was done at the hospital in Springfield which revealed a grossly bloody cerebrospinal fluid. The patient did well after admission to the hospital in St. Louis. Her headache cleared considerably. Spinal

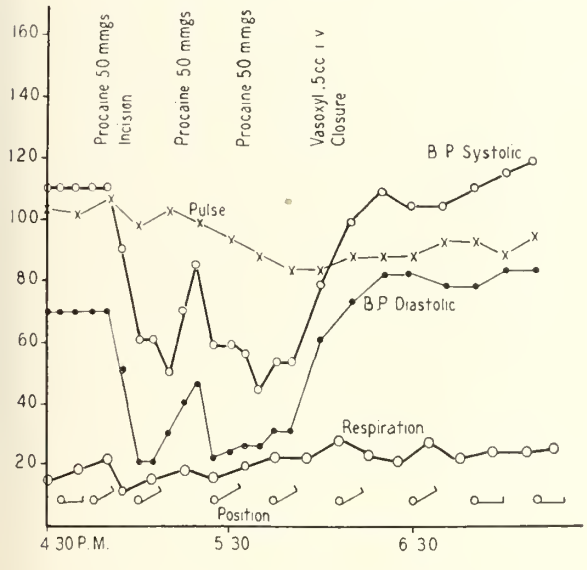


Fig. 1. Case 1.

puncture was repeated and the spinal fluid was again grossly bloody. On August 3, under general anesthesia, bilateral angiograms were done with the open technic and a left sided hemangioma connected to the posterior communicating artery, on the underside of the left occipital lobe near the midline was found. On August 6, under pentothal, nitrous oxide and high spinal anesthesia, a left occipital-temporal-parietal flap was turned. The dura was opened and the large veins entering the lateral sinus were coagulated. The occipital lobe was elevated down to the incisura. The posterior communicating artery was identified, as was the posterior cerebral. At about one-half inch from the midline, a hemangioma was seen. Some vessels were coagulated. No attempt was made to remove the lesion because of its location. All bleeding was controlled with electrocautery and the wound was closed in layers with black silk with one stab drain under the bone flap.

Case 2. Mr. R. H., aged 41, referred by Wilson Ferguson, M.D., Sikeston, Missouri, a white male,

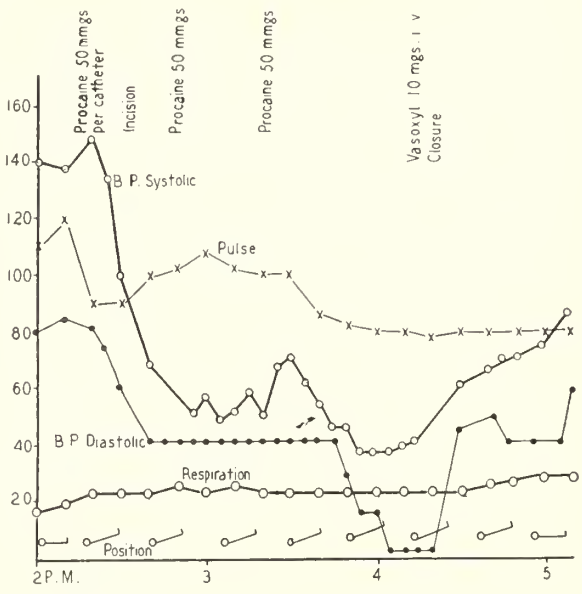


Fig. 2. Case 2.

was admitted to Missouri Baptist Hospital with a history of fainting twenty-four hours before. This patient had been having right frontal headaches intermittently for more than twenty years. He had vomited nearly every morning during the time he was in college. For the last fifteen years the patient's headaches were not too bad. In the early part of July 1951 the headaches became much worse. Five days before admission the patient went to his doctor and got some medicine, which gave him some relief from his headache. At about 6 a.m. on July 21, 1951, the patient fainted and fell to the floor. There was some jerking of his right arm. He did not regain consciousness for about three hours, and had been vomiting intermittently since. He was seen by Dr. Ferguson at Sikeston and lumbar puncture showed a grossly bloody spinal fluid. On admission the patient's neck was stiff, he had a bilateral Kernig's sign, and temperature was 98.6, pulse 80, respiration 20 and blood pressure 120/70. He was fairly alert but did not remember fainting. The neurologic examination was otherwise normal. The palpebral fissure on the right seemed slightly smaller than on the left. Lumbar puncture again showed a grossly bloody fluid with a pressure of around 300 mm. The patient was allowed to wait until August 4, when bilateral angiograms were done with open technic and under general anesthesia. There was a large sacular aneurysm in the region of the posterior communicating artery on the right side (fig. 3).

On August 13, under continuous spinal, pentothal and nitrous oxide and oxygen anesthesia, a right sided frontal-temporal-parietal flap was turned, the

skin over the eye, the bone flap over the right ear. The dura was opened. The frontal lobe was retracted and the right optic nerve was seen. Then the large vein draining the temporal lobe was coagulated and cut. The temporal lobe was then elevated and the internal carotid artery could be seen. At this point a 2 cm. incision was made in the tip of the right temporal lobe and the distal 4 cm. of the temporal lobe was resected. The systolic blood



Fig. 3. Note saccular aneurysm just above the sella turcica in the region of the posterior communicating artery.

pressure was then dropped to from 20 to 30 mm. of mercury. As the brain was dissected free from the artery, the aneurysm was seen and, with further dissection, the aneurysm ruptured. This was rather easily controlled by means of suction and cottonoid, and then we were able to put four silver clips on the aneurysm proper. All bleeding was controlled. The wound was then closed in layers with black silk, with one stab drain under the bone flap and one stab drain under the skin flap (fig. 4).

Postoperatively, during the first twenty-four hours, the patient went into a peripheral vascular collapse; his temperature rose to 106 F. and, though the patient was conscious and cooperative, we had considerable difficulty getting his blood pressure up to normal levels. During the next few days he developed a diabetes insipidus which was controlled by the use of pitressin. He was discharged on September 2, 1951.

ANESTHESIA

The anesthetic management in these two cases was essentially the same.

Premedication consisted of morphine and atropine sulphate in the ratio of twenty-five to one, since neither exhibited elevation of intracranial pressure. Nembutal was given in doses of one and one half grains the night before and on the day of surgery one and one half hours prior to the time scheduled.

With the patient in the lateral recumbent position and under local novocain anesthesia, a Tuohy intraspinal catheter was introduced through a Huber needle between the third and fourth lumbar vertebrae and continued cephalad in the arachnoid to approximately the level of the ninth thoracic vertebra.

The pharynx, larynx and upper trachea were treated topically with 5 per cent cocaine hydrochloride. This procedure minimized "bucking" (explosive coughing) under light anesthesia.

Following oral intubation under pentothal (2.5 per cent) and curare induction in the first case and cyclopropane-oxygen in the second case, maintenance was carried out under .4 per cent pentothal in 5 per cent glucose as an intravenous drip. Oxygen was administered throughout under a pressure of ten to twelve centimeters of water, with carbon-dioxide absorption. Two fifteen gauge needles were inserted into the ankle veins and maintained in a state of readiness to receive fluid and blood or both.

One per cent novocain was used as a field block at the site of incision and for the scalp flap. When the incision was made, 50 milligrams of novocain in 1 cubic centimeter of saline was introduced into the catheter and the operating table positioned to eight degrees Trendelenburg. Novocain via catheter was repeated every ten to fifteen minutes as often as necessary to maintain the desired hypotension.

Blood loss throughout the surgical procedure



Fig. 4. Postoperative film following obliteration of the aneurysm.

was small in both cases and was replaced immediately.

At the close of the surgical procedure, .25 cubic centimeter of vasoxyl was administered intravenously, and repeated at five minute intervals until the blood pressure returned to the preoperative level.

COMMENTS DURING ANESTHESIA

Respiration continued rhythmic and regular and with a tidal volume of from 400 to 500 cubic centimeters throughout the entire procedure. In-

tercostal movement remained active throughout. The arteriolar-capillary refill time as measured on the nail bed remained within normal limits throughout. The pulse maintained a full quality and remained regular throughout the procedure. Skin temperature remained normal. There was a definite tissue ischemia at the operative field shortly following the incision. When the pial vessels were exposed they were found to be definitely constricted. Brain pulsations were decreased visibly and the operative field in general was relatively bloodless. Slowing of the pulse rate was observed during the surgical procedure in Case 2. This was due to the influence of the anesthetic agent on the cardio accelerator center.

DISCUSSION

Induced hypotension is not new. It has been employed by several workers as early as the beginning of the twentieth century.

Jonnesco[5] in 1909 remarks on the use of total spinal anesthesia in Britain. Total spinal anesthesia to produce hypotension is being employed on Professor Learmonth's service at the Royal Infirmary in Edinburgh. More recently Swanson, Galvin and Fincher[3] of Emory University have employed total spinal anesthesia as a means of producing hypotension in the surgical management of congenital arterio-venous aneurysms. These workers employed essentially Learmonths' technic as they observed it.

Another method of inducing and controlling blood pressure during certain surgical procedures is described by Donald E. Hale of Cleveland.[6] His method entails essentially arterial donation and temporary storage in multiple reservoirs. He collects blood from the canulated radial artery during anesthesia and surgery, returning it again at or near the close of the procedure in quantities which he deems necessary to maintain normal physiology. His report described induced hypotension during craniotomy and the fenestration operation in some two hundred cases.

The foregoing methods were seriously considered by the authors but because of the fact that previous methods lacked positive control, the authors set out to find a method with greater flexibility. It was decided to employ fractional spinal anesthesia to induce and control vascular tension.

It is a well known fact that arteriolar dilatation from vasoconstrictor paralysis in anesthetized segments of the body is the principal cause of hypotension during spinal anesthesia.

Compensatory vasoconstriction occurs in the area not under the effect of the anesthetic agent. The ratio between the area of vasodilatation and that of compensatory vasoconstriction determines to a great degree the blood pressure drop.[7] These changes account for the constriction of the pial vessels in the operative field.

The effect of periods of low arterial pressure in animals and in the human subject has been of interest for many years.

Page, Taylor and Kahlstaedt[8] report a case of arsenic trioxide poisoning. The patient's blood pressure on admission to the hospital and while reclining was 38/0 millimeters mercury by auscultation and approximately 30 millimeters by intra-arterial puncture. This patient failed to show signs of shock because he was able to maintain tissue flow by increasing greatly the volume of blood ejected from the heart under low tension and into blood vessels that were not excessively constricted. The abnormality basically was a great decrease in the peripheral resistance in the vascular bed due to vasodilatation. Clearly, the level of arterial pressure is not the major determinant of tissue perfusion, nor in hypotension necessarily coexistent with shock. Rather, the caliber of the arterial blood vessels is the major issue. In this respect the clinical picture was the reverse of shock in that both arterial pressure and tissue perfusion is severely reduced.

Inasmuch as brain surgery requires light anesthesia, other factors exploited during the surgical procedure tend to increase the safety of the patient. The supine position, material reduction of metabolic rate with morphine and a constant supply of oxygen under tension which greatly increases the dissolved oxygen appears to furnish an ideal physiologic background for this type of surgery.

The type of patient in which this procedure can be carried out safely should be selected. The position of the patient on the table can be varied inasmuch as hypobaric solutions may be used intraspinally in the prone position.

It must be mentioned that a slightly hyperbaric solution was used in these two cases. This solution (50 milligrams of procaine in 1 cubic centimeter of saline) had practically no effect on the motor components of the cord, since it was given slowly and was allowed to gravitate to the dependent sensory system of the segments.

CONCLUSION

1. A method of induced and controlled hypotension for certain surgical procedures of the brain is described.

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PERIARTERITIS NODOSA

CASE REPORT WITH REVIEW OF THE LITERATURE

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Periarteritis nodosa (polyarteritis or panarteritis) is a disseminated disease characterized by focal inflammatory lesions of the arterioles of unknown origin which has a serious prognosis.[1] This rather rare disease was first named by Kussmaul and Maier in 1866 but the macroscopic findings were described as early as 1853 by Rokitansky. Thirty-five years later, Eppinger reviewed Rokitansky's case and confirmed the diagnosis microscopically. As far back as 1766 Metani described a case in which there were widely disseminated small aneurysms which might have been the lesions of periarteritis nodosa. In recent years, Boyd has made a clinical review of 395 cases reported in the literature and to the present time more than 400 cases have been reported.[2]

The disease is easily overlooked if not kept in mind. The principal reason for the increasing number of cases reported is probably due more to improvement in diagnostic perception than to an actual increase in the incidence of the disease; however, the widespread usage of the sulfonamides may possibly be responsible for part of this rise in case reports.[3, 4]

Since the description given in the more commonly used textbooks is brief and inadequate and since the condition is often misdiagnosed, the following case is reported in detail.

REPORT OF CASE

A 61 year old white woman was admitted to St. Joseph Hospital for a period from May 1 through June 5, 1949, and readmitted from November 30, 1949, until her death on January 4, 1950. The past history and family history were essentially irrelevant except that she had had two normal deliveries and that the menopause had occurred at 52 years of age.

The onset of her illness dated to October 1948 when she developed a "cold" characterized by anorexia, weakness, a slight but unknown amount of weight loss and a persistent dry cough. X-ray and sputum examinations for tuberculosis were negative. Four months later she began having recurrent episodes of dyspnea and wheezing which could not be explained on a cardiac basis. Lipiodol bronchograms revealed no abnormalities; however, two days after this study she developed a generalized eruption (mouth and throat as well) of small clear bullae and her "asthma" became more severe.

On May 1, 1949, she was first admitted to St. Joseph Hospital with the chief complaints of the sudden onset of weakness and burning pain in her arms and legs and numbness of hands and feet; during the next few weeks these symptoms progressed until she could not walk or use her hands.

During this period of hospitalization, the only other complaints were blurring of vision, pain in the base of the skull and generalized headache, which were of only a few days' duration. Some weakness and anorexia were noted but there was no joint swelling and never any fever.

Complete physical examination including fundoscopy revealed no abnormalities. Extensive clinical, laboratory and x-ray examinations were all within normal limits except for the following: hemoglobin 10 grams or 68 per cent, white blood cells 23,000, a persistent eosinophilia (56, 60, 51 and 43 per cent), an increased erythrocyte sedimentation rate (18 mm. per hour, Cutler's method) and a slight hematuria.

Treatment was supportive and symptomatic including bed rest and opiates periodically to relieve her pain. She was given no sulfonamide preparations and, as far as could be determined, had never received any sulfonamides previously. After a thirty-six day stay, she had improved sufficiently to be discharged as a semi-ambulatory patient.

Following discharge she was encouraged to remain as active as possible. However, weakness, fatigue and the asthmatic symptoms became progressively more severe. As none of the usual symptomatic measures were effective, she was placed on a diet restricted to those foods which were well tolerated and without other measures she then became symptom free and gained weight during the ensuing four weeks. Later, however, continuing on this regime, her symptoms gradually returned and on November 30, 1949, an episode of syncope occurred as a result of which she was readmitted to St. Joseph Hospital.

Her complaints at the time of readmission consisted of burning pain and numbness of the hands and feet, weakness and loss of weight, asthma, frontal and occipital headaches, constipation and occasional vomiting. Physical examination revealed an extremely emaciated, pale, elderly white female. Temperature was 98.0 F., pulse 76, respirations 20, blood pressure 110/80. The thorax was emphysematous. Dullness to percussion and scattered moist rales were noted in the right subscapular region. Cardiac auscultation was essentially normal. The abdomen was distended but soft. The liver was tender and palpable about 5 cm. below the right costal margin. The spleen and kidneys were not palpable nor was there evidence of ascites or caput medusa. All joints appeared normal but there was marked weakness and atrophy of all muscles without, however, evidence of paralysis. Pulsations were strong in the radial, dorsalis pedis and posterior tibial arteries; no nodules or tenderness were noted in these vessels. Sensation was somewhat decreased in both legs and there was definite anesthesia of the lateral border of the feet. Coordination and joint sensation were normal. The patellar reflexes were hypoactive and a Babinski type plantar response was present on the right. The remainder of the examination was essentially normal.

Laboratory studies revealed a constant albuminuria (2 plus or moderate clouding) and hematuria (10 to more than 100 per high power field). The urinary specific gravity varied from 1.011 to 1.017, usually being about 1.015. The initial hemoglobin was 8.5 grams or 58 per cent and rose after blood transfusions to 12.5 grams or 84 per cent. The leukocyte count remained around 20,000 with a constant eosinophilia (41, 19, 37 and 31 per cent). A peripheral blood smear showed eosinophilia but otherwise a normal blood

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From St. Joseph Hospital, Kansas City, and the Arthritis Clinic, Kansas City General Hospital No. 1, sponsored by the Kansas City Chapter of the Arthritis and Rheumatism Foundation.

picture. Stool examinations were repeatedly negative for ova and parasites. A lymph node biopsy revealed only reticular hyperplasia. Blood chemical determinations were as follows: serum albumin 1.50 gm. per cent and 3.34 gm. per cent. Repeated nonprotein increased after blood transfusions to 3.39 gm. per cent and 3.34 gm. per cent. Repeated nonprotein nitrogen determinations were around 70 mg. per cent and whole blood urate values ranged from 4 to 5 mg. per cent. The fasting blood sugar was 100 mg. per cent and the total cholesterol was 167 mg. per cent. Wasserman, Kahn and routine agglutinations were negative. Gastric analysis yielded no free hydrochloric acid. A sputum specimen showed few gram-positive cocci and gram-negative rods; no acid-fast bacilli were demonstrated.

An electrocardiogram taken on December 23, 1949, showed evidence of generalized myocardial damage with some acute diffuse changes (normal sinus rhythm, rate 110, PR interval 0.12 seconds, QRS upright in Leads I, II and III, T-waves flattened in I and III and upright in II. CF II, IV and V showed flattened to diphasic T-waves). A roentgenogram of the chest showed residual opaque material (from the previous lipiodol injection) in the right lower lung field and pulmonary emphysema.

On the basis of the tetrad of asthma, nephritis, polyneuritis and the sustained high eosinophilia, a clinical diagnosis of periarteritis nodosa was made. Symptomatic treatment was continued but the patient became progressively worse. (ACTH and cortisone unfortunately were not available.) Myalgias became severe and she had further asthmatic episodes. Eleven days before her death, her abdomen became distended and a flat film showed evidence of a partial intestinal obstruction. These findings subsided following the use of a Miller-Abbott tube, a colon tube and prostigmine. Her temperature which had been normal rose a few days later to 102.4 F. and then dropped to subnormal levels forty-eight hours later to remain so until she expired. During the last week, she had from six to eight convulsive seizures. Finally, she became comatose and the neurologic changes of a right hemiplegia, suggesting a left-sided cerebral vascular accident, developed.

On January 4, the patient had a generalized convulsion. A lumbar puncture was performed shortly thereafter with the following findings: recumbent pressure 280 mm. of water; bloody cloudy fluid, differential count: 2 lymphocytes, 2,290 erythrocytes and many "ghost" erythrocytes; total protein 200 mg. per cent, sugar 89 per cent. Colloidal gold and serologic studies were normal. The patient died later that day, approximately fifteen months after the onset of her symptoms.

FINDINGS AT NECROPSY*

The positive gross findings at autopsy were marked emaciation, muscular atrophy and edema of the lower legs. On opening the body, the cecum and ascending colon were markedly distended. The heart was not enlarged but showed scarring of the lower portion of the interventricular septum; no other areas of scarring were seen nor were nodules found in any of the visceral or cerebral arteries grossly. The spleen was congested but not appreciably enlarged. Examination of the brain revealed an area of encephalomalacia and hemorrhage in the left temporal lobe, a left subdural hematoma and a fresh hemorrhage in the right parietal lobe.

The histologic examination showed that numbers of the smaller arteries had slightly to markedly thickened walls with lumina frequently obliterated by a reddish staining fibrinoid material. The inflammatory reaction seen around these vessels was of the acute type, in many areas showing infiltration with polymorphonuclears, plasma cells and numerous eosinophils. In some areas a granulomatous type of reaction was found with single or multinucleated giant cells and a granular fibrinoid material. Finally, areas with primary fibrotic changes in the vessel walls were noted. No aneurysms or thrombi were noted in either the smaller or larger arterioles and there was little or no evidence of cholesterol deposition or other atheromatous change. The veins were normal.

These changes were particularly frequent in the arterioles of the heart, spleen, pancreas, adrenals, periadrenal tissue and mesenteric tissue, but sections taken from the kidneys, lungs and brain revealed no evidence of the previously described arteritis. The kidneys presented a markedly diffuse glomerular nephritis with loss of the glomeruli, showing rather extensive hyaline changes and occasional epithelial crescents. Special stains of sections from the heart, pancreas and mesenteric vessels revealed no typical polychromasia.

The pathologic diagnoses included generalized periarteritis with involvement of the myocardial, splenic, pancreatic, adrenal, periadrenal and mesenteric arterioles, advanced glomerulonephritis, encephalomalacia of the left temporal lobe, hemorrhage in the right parietal lobe, interstitial myocardial fibrosis, pulmonary congestion and edema, acute congestion of the spleen and edema of the lower legs.

DISCUSSION

Although the etiology of periarteritis nodosa is unknown, several interesting speculations have been made. Some years ago it was suggested that this disease might result from the effects of high blood pressure on a congenitally defective vascular system or that it might be an unusual manifestation of syphilis. Van Haun, Harris and Friedrich advanced the belief that streptococcic or virus infections might play a role in its etiology. Since a history of rheumatic fever is found in about 10 per cent of cases and at autopsy findings suggestive or rheumatic pancarditis are not uncommon, this possible interrelationship has been stressed.[5] Additionally, the similarity of periarteritis nodosa and malignant nephrosclerosis has been described by Fahr.

In recent years the hypothesis that periarteritis nodosa is the result of an allergic vascular reaction has been suggested (Grubner, Teilum, Vaubel and others). In about 20 per cent of cases there is a history of allergic manifestations as asthma, skin rashes, eosinophilia and diarrhea. As the onset of the disease frequently is preceded by an infection, the allergen in most cases is presumed to be of a bacterial nature, but cases have been reported following serum sickness and reactions to sulfonamides, iodine, thiourea and other substances.[3, 4, 6] Rich and his coworkers later demonstrated that ACTH and cortisone were able to inhibit the experimental cardiovascular lesions produced by anaphylactic hypersensitivity in a high percentage of experimental animals.[7]

Present opinion is that multiple etiologic factors may be involved in the production of this disease with an allergic reaction to either drugs or infectious processes playing a prominent role. There is much clinical and histologic evidence to suggest that periarteritis nodosa may be related to such diseases as disseminated lupus erythematosus, rheumatic fever and rheumatoid arthritis, Henoch

* Necropsy performed by Dr. R. W. Kerr.

and Schoenlein's purpura, scleroderma and dermatomyositis. They may possibly be merely the different clinical manifestations of various agents with the same underlying pathophysiologic process. In this respect, it is interesting that Selye[8, 9, 10, 11] has been able to produce in rats the lesions of nephrosclerosis, rheumatic carditis, rheumatoid arthritis and periarteritis nodosa by the repeated administrations of desoxycorticosterone or desoxocortisone (Reichstein's "Compound S"), two mineralocorticoids from the adrenal cortex. Additionally, administration of lyophilized anterior pituitary tissue, renal pressor substance and different forms of stress have experimentally produced periarteritis nodosa.[11]

These and other observations led Selye[10] to hypothesize that "as a result of exposure to stress (e.g., that caused by emotional stimuli, infections or intoxications), the adrenal may under certain circumstances respond with a disproportionate over-production of either the gluco- or the mineralocorticoids," and that periarteritis nodosa, a disease of maladaptation, "could perhaps be the result of an unbalanced excess of the latter type of steroid." More recently two glucocorticosteroids, Kendall's "Compounds E (cortisone) and F," have shown temporary inhibiting effects against rheumatoid arthritis, rheumatic fever, disseminated lupus erythematosus and periarteritis nodosa, the same diseases which, according to Selye, can be produced in rats by administering the mineralocorticoids, desoxycorticosterone and desoxocortisone. The pituitary adrenal corticotrophic hormone (ACTH) has had an effect in these diseases practically identical to cortisone, this effect depending on increased adrenal output of glucocorticoids under ACTH stimulation.

PATHOLOGY

The pathologic changes in periarteritis nodosa are, as the name implies, primarily in the arteries, especially the medium sized and smaller ones, but veins and arteries of any caliber in all parts of the body may be affected. Tissues and organs receiving their blood supply from the affected vessels suffer secondarily.

Arkin[12] has divided the histologic changes into four stages: (1) degenerative stage (hyaline degeneration of the media); (2) acute inflammatory stake (infiltration of the vessel wall with polymorphonuclears, eosinophils, lymphocytes and plasma cells); (3) stage of granulation (fibroblastic proliferation), and (4) so-called healed stage (obliterated or reduced lumen with replacement of the vessel wall by scar tissue and with periarterial fibrosis).

Injury of the intima may lead to thrombosis or the disease weakened walls may give away entirely with resulting hemorrhage and occasionally the formation of small aneurysms. Organization of thrombosed aneurysms my give rise to firm periarterial nodules which suggest the diagnosis upon gross examination, though the final diagnosis is of course microscopic. Occasionally it may be necessary to examine serial sections as the lesions may be localized (appendiceal or temporal arteries) but usually they are widespread, involving many organs, systems or tissues simultaneously. Any or all of the previously enumerated pathologic changes may be present at a given time. The findings of various stages of involvement in a single section aids in differentiating this condition from thromboangiitis obliterans and bacterial arteritis. The organs most frequently affected are:[13] kidneys 80 per cent, heart 70 per cent, liver 65 per cent, and gastrointestinal tract 50 per cent.

The cause of death in Boyd's[2] series of 128 cases was nephritis 35, cardiac failure 31, perirenal hemorrhage 15, bronchopneumonia 11, peritonitis 9, hepatic hemorrhage 6, and cerebral hemorrhage 5.

CLINICAL COURSE

The onset of illness may be sudden or insidious and the clinical course is extremely variable; it may be fatal, prolonged, or punctuated by remissions and exacerbations. Case reports published prior to 1950 indicate that the usual life expectancy following onset is under one year.[14]

No age groups are unaffected but more than one half of the cases occur between 20 and 40 years. In contrast to disseminated lupus erythematosus, men are more frequently attacked in a ratio of about three to one.

Few diseases have a more variable symptomatology but the most common clinical features are included in the tetrad of Meyer and Brinkman (chlorotic marasmus, polymyositis, polyneuritis and nephritis). Depending on the location and extent of the vascular disease, the predominant findings may be in pulmonary, cardiac, endocrine, musculoskeletal or cutaneous structures.

The renal signs are usually those of nephrosclerosis or glomerulonephritis; a high percentage of the patients die in uremia, but the only signs of kidney affection may be slight hematuria or albuminuria.

The electrocardiogram may reveal tachycardia and nonspecific changes only. Surprisingly, although chest pain is an uncommon complaint, myocardial infarctions are fairly frequently found at autopsy.

Gastrointestinal manifestations may consist of pain, nausea and vomiting, constipation, distention, melena, jaundice and symptoms of perforation or peritonitis. They may simulate such conditions as carcinoma of the stomach or colon, peptic ulcer, ulcerative colitis, typhoid fever, regional enteritis or tuberculosis. The abdominal symptoms often have led to mistaken diagnosis and such operations as appandectomy or cholecystectomy. An unusual sigmoidoscopic picture led to the correct diagnosis in a case in which the lower bowel was affected (Felsen).[15]

Pulmonary symptoms may occur without any

histologic evidence of periarteritis nodosa being found in the lungs. The most common pulmonary manifestations are wheezing, dyspnea and cough. In the series of Gelfond and Aronoff,[3] the incidence of bronchial asthma was approximately 60 per cent. Hemoptysis, due to infarction or rupture of a weakened vessel, may occur and the symptoms may be confused with pulmonary tuberculosis. The chest roentgenogram may show no specific changes, but a fan-like pulmonary infiltration extending out from the hilar region, although not diagnostic of periarteritis nodosa, may suggest that diagnosis in an otherwise obscure problem. Tomenius[16] described two cases, that first appeared as transient long infiltrations with eosinophilia (Loeffler's syndrome).

Evidence of central nervous system involvement is also extremely varied, depending on the location and degree of vascular involvement. Cerebral hemorrhage as the result of hypertension, infarction or rupture of a weakened vessel is a common cause of death. The most common type of nervous involvement is peripheral neuritis secondary to changes in the nutrient arteries. Pain, numbness, weakness in the arms and legs and occasionally foot or wrist drop are frequent symptoms and are sometimes the presenting complaints.

Scotomata and blurring of vision may be noted and fundoscopic examination may reveal any of the findings characteristic of hypertensive retinopathy, such as arteriolar spasm, flame hemorrhages and, even, papilledema. Cases have been reported in which the diagnosis was established through ophthalmoscopic discovery of nodes along the retinal vessels.[17] Another picture of fundal changes with small grey spots with diffuse limitations resembling foci in miliary tuberculosis was observed by Gjertz, et al.[18]

Joint symptoms are frequent and vary from arthralgias to migratory arthritis. Histologic study of synovia have shown arterial involvement identical to that seen elsewhere in the disease with secondary spotty synovial change.[19] Muscle pains, soreness and atrophy are common and may simulate trichinosis. Muscle biopsy may establish the diagnosis but is frequently negative.

The endocrine organs most frequently involved are the adrenals, pancreas and testes. Either proliferative or destructive or both types of changes my be found in the adrenals; interestingly, according to Selye, if the proliferative lesions predominate, the disease may be explained as the result of an overproduction of the mineralocorticoids, whereas, if the destructive lesions predominate, the manifestations may result from a deficiency of the glucocorticoids.[11]

Many types of skin lesions have been described —macules, nodules, purpura, petechiae, urticaria and necrosis, to mention some of them. A special cutaneous form has been described as periarteritis nodosa cutis.

The symptoms, signs and clinical course of the disease depend to a considerable degree on the organs of systems most extensively or vitally involved. An unusual combination of symptoms or signs indicating multisystem involvement is suggestive of periarteritis nodosa and, if in addition a high sustained eosinophilia is found, it should be strongly suspected. It is to be noted that eosinophilia is frequent in cases with asthma but uncommon in cases without asthma. Biopsy is the only way to verify the diagnosis, but a negative biopsy does not entirely exclude the disease.

Findings in more than one third of the cases in order of the frequency are: fever, leukocytosis, elevated erythrocyte sedimentation rate, albuminuria, abdominal pain, hypertension, edema, neuritis, hematuria, anemia, tachycardia, weakness, weight loss, dyspnea, cough, wasting, sensory involvement, vomiting and eosinophilia.[20, 21] Nodules on the peripheral arteries can be discovered in only about 20 per cent of cases.

TREATMENT

As this disease may possibly be the result of an abnormal immune response, it is recommended that a careful search be made for possible allergens. Sulfonamide drugs especially are contraindicated, even in the treatment of coincidental or secondary infections, should they occur in the course of periarteritis nodosa since they may in certain instances play a role in the etiology of the disease. During the period that ACTH and cortisone have been available for clinical use, reports have been made on the treatment of about fourteen cases. These reports are encouraging but the remissions obtained seem only temporary. The effect of these hormones is probably suppressive rather than curative.

Shick and his coworkers[22] treated two cases of periarteritis nodosa with ACTH and three with cortisone. All showed initial improvement but at the time of the report, two who had received cortisone (for 75 and 146 days or 3.6 and 13.4 grams of cortisone respectively), died. On a clinical basis, these deaths resulted from cardiorenal failure; postmortem examination revealed widespread visceral infarctions secondary to obliterative fibrosis of the blood vessels (the healing stage of Arkin).[12] In a single case treated with ACTH by Carey,[23] serial muscle biopsies showed healing changes. Irons and others[24] reported remission five days after the institution of ACTH treatment in one patient (who later developed asymptomatic occlusion of the left dorsalis pedis artery). Clinical and pathologic remission with physical improvement lasting up to fourteen months has recently been reported in one patient receiving prolonged ACTH therapy.[25]

These and other reports suggest that ACTH or cortisone should be given as early as possible in the course of this disease. Though it is not established definitely, the possibility that ACTH or cortisone administered to the patient with extensive disease might result in an increase in symptomatology or hasten death by widespread vascu-

lar occlusion secondary to healing must be considered.

PROGNOSIS

The prognosis is poor. A few cases have been reported as cured.[4, 20] Remissions are not infrequent but relapse may follow years after apparent disappearance of the disease. The case fatality rate usually stated is approximately 90 per cent but, as milder forms are probably overlooked, this figure is almost certainly inaccurate.

SUMMARY

The case history and autopsy findings of a patient with periarteritis nodosa are presented. Her complaints and findings were loss of weight, weakness, asthma, myalgias, pain and numbness in the extremities, edema, albuminuria and hematuria, anemia, leukocytosis, a persistent high eosinophilia, increased erythrocyte sedimentation rate, increased nonprotein nitrogen and evidence of generalized myocardial damage. These are common manifestations of periarteritis nodosa. It was puzzling and unusual that this patient did not have fever (except terminally) or hypertension and though antemortem muscle studies were not done, a lymph node biopsy did not show specific changes. Following a cerebral vascular accident, she died, approximately fifteen months after the onset of her symptoms.

Autopsy demonstrated periarteritis nodosa involving most organs and intracranial hemorrhages, presumably secondary to vascular lesions of the brain.

The etiology, pathophysiology, symptoms, signs and laboratory findings are discussed.

Although formerly the early diagnosis of periarteritis nodosa was only of academic interest, it may now be of considerable importance since reports suggest that promising results may be obtained in some cases by treatment with cortisone or ACTH.

Kansas City General Hospital.

We acknowledge with appreciation the criticisms of Drs. E. W. Boland, Victor B. Buhler and V. E. Cofer, Jr., in preparing this report.

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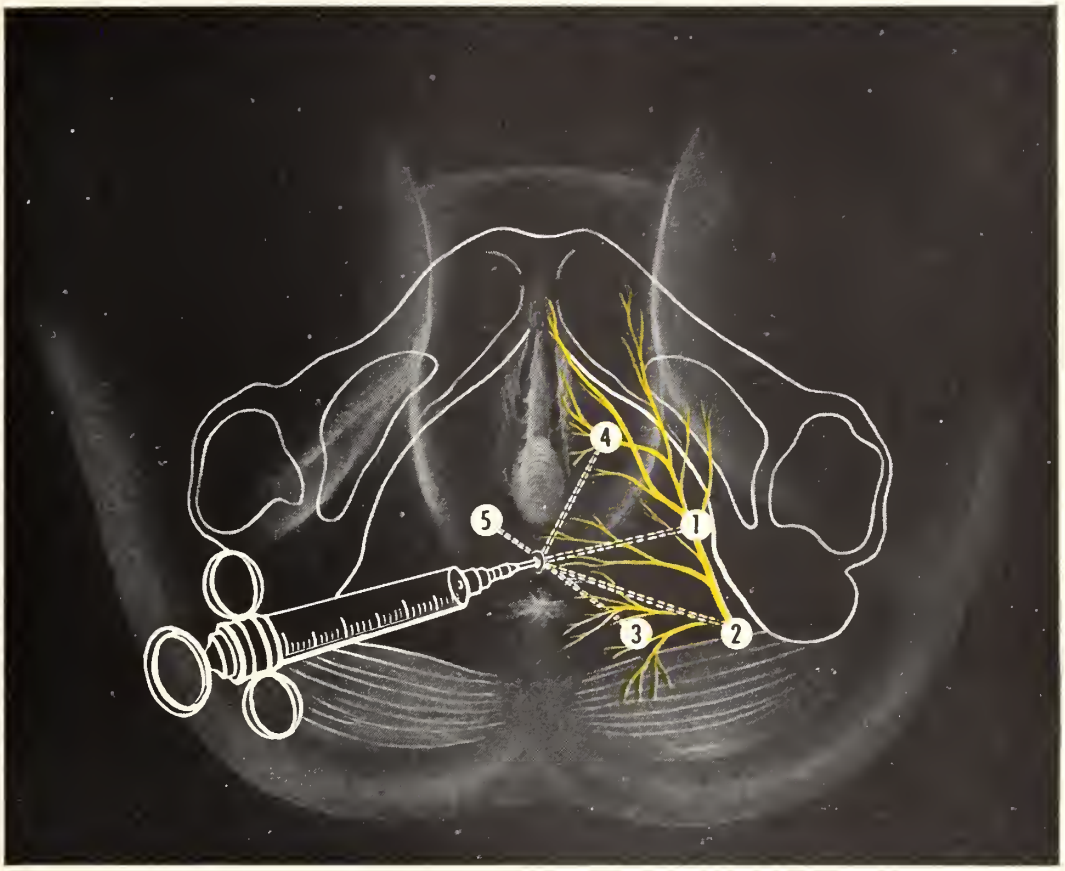
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Sites for injection of local anesthesia in obstetrics. Sites 1 to 4 should be similarly injected on the contralateral side. Site 5 is for episiotomy. Adapted from Johnson, O. J.: Nerve Block in Painless Childbirth, J.A.M.A. *145*:401 (Feb. 10) 1951.

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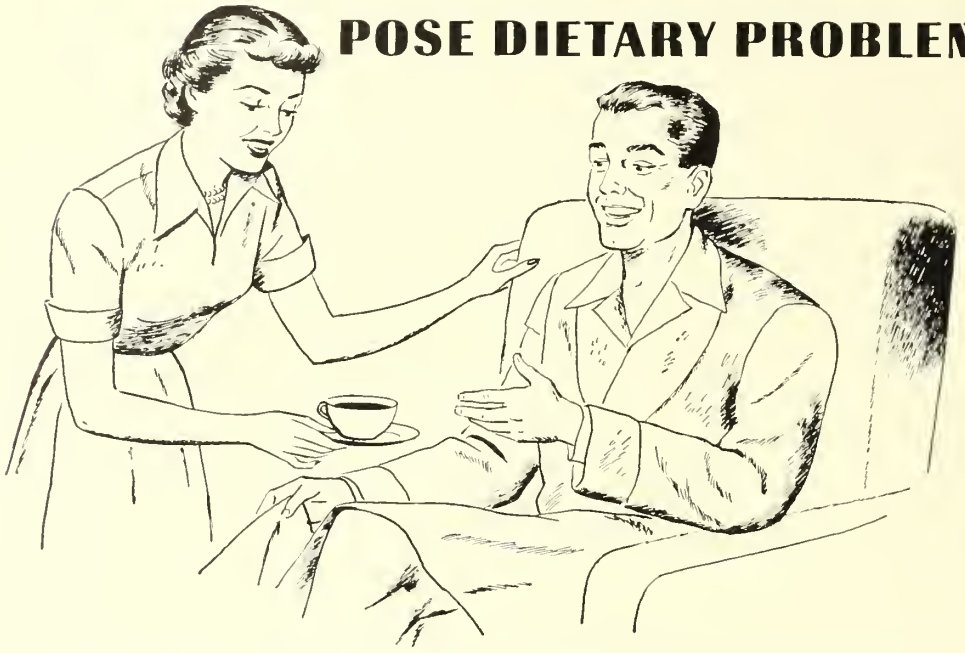
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Previously recognized as an isolated problem of individual concern and blanketed by moral and social taboo, today sterility has been accepted by the public and the medical profession as a widely prevalent social and medical enigma. With the recognition, during recent years, of the problem of sterility as a foremost medical challenge, a multitude of new concepts of diagnosis and therapy have resulted. Under the stimulus of this upsurge of interest, an infertility service has been organized and set into operation at the School of Medicine of Washington University.

Objectively, from a research point of view, this clinic is guided by a fourfold principle: (1) trial and discovery of new procedures; (2) elimination of superfluous and obsolete methods; (3) development of more accurate technics, with emphasis on the timing of ovulation and specific aids to conception, and (4) determination of the relative value of an intensive, concentrated program, such as we have developed, by comparison with other sterility series. Subjectively, it is the basic aim of this clinic to integrate the study of infertility so that each husband and wife who are evaluated may understand completely (a) their chances of conception; (b) their chances of having a full term living child, and (c) the general therapeutic measures that can and will be employed to help them achieve their goal.

Certain facilities have been found essential for proper function of this service. A private office is available for all interviews and discussions of problems. A private well equipped examining room is accessible at all times. A laboratory has been set up to handle specific laboratory work relative to infertility.

The patients included in the group essentially fall into four categories: (1) primary sterility, i.e., sincere unsuccessful trial at conception for at least one year, (2) secondary sterility, i.e., one or more full term pregnancies followed by at least two years of sincere trial without success, (3) recurrent abortion, and (4) repeat attempt, i.e., an initial problem in either of the first three categories culminating with a full term living child returning for another course of diagnosis and therapy.

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Approximately 65 per cent of these couples have seen at least one physician previously regarding their infertility. All couples are treated on a private patient basis and must volunteer complete cooperation of both husband and wife for at least one year. Certainly the necessity of management of the couple as a single biologic unit has been well recognized in the last several years.[1]

THE INITIAL INTERVIEW

Probably the most universally neglected and perhaps one of the most rewarding practices is that of an initial informal interview with both husband and wife. This appointment should not be associated with ordinary office hours, for in no case has the original orientation talk lasted less than one hour. The talk is initiated by the doctor who attempts to put the couple at ease immediately by disclosing the high incidence of sterility (one involuntarily sterile union in every eight marriages).[2a] They are brought to realize that they comprise no medical oddity but are indeed involved in a common situation.

This leads to a brief discussion of the general operation of the service. Emphasis is placed on the time and effort that will be expended to help them solve their problem. Then the couple is asked to present their own history of sterility. This is in turn followed by a detailed explanation in layman's terms of (a) the basic physiology of the human genital system, both male and female, and (b) the phenomenon of conception. The talk at this time becomes pointed by direct reference to the habits in general, and sex practices in particular, that are primarily requisite for the successful solution of the average sterility problem. Again with careful questioning, these principles are brought to bear upon the specific situation at hand. In this way, personal factors, especially those regarding sex habits, are uncovered that might otherwise never come to light if this initial discussion were omitted. It is surprising to learn how rarely advice has been given relative to particular problems to any one couple. This is usually the result of failure by the physician to discover these problems in a couple that may be either too embarrassed or too inhibited to voluntarily disclose them. It is important to realize that, in the presence of the other partner, each member of a couple might not readily offer pertinent information. This is rectified later when the partners are seen separately.

If conducted properly, the initial interview should instill in the couple a feeling of enthusiasm. This is especially important if they have experienced previous lack of success involving the expenditure of time and money. Although an air of buoyancy over previous success in the

clinic series is made obvious, this is curbed in no uncertain terms by definite clarification of the probabilities of any one couple attaining success.

Attitudes of short term pessimism and long term optimism are advised. No question is left regarding the overwhelming interest of all the personnel in that particular couple's problem.

BASELINE ROUTINE IN THE MALE

In every case, the male is checked routinely before any work is started on the female. Following the initial interview, the starting point of the work-up is taken as the day of onset of any menstrual period. During the menses, a natural time of continence, the husband is first seen alone. In succession he is subjected to a basal metabolic rate, complete blood count, urinalysis, and chest x-ray. A complete and detailed history is then taken and recorded, including such salient factors as the following: age, period of marriage, period of contraception, period of trial, previous marriage and resultant pregnancies, childhood diseases, especially mumps and resultant complications, other serious illnesses, operations, venereal diseases and other genital infections, x-ray and radium exposure, recent marked weight changes, injuries, occupation, diet, drug and alcohol ingestion, tobacco consumption, frequency and position of coitus and difficulties in coitus. This is followed by a routine complete physical examination with emphasis on lower abdomen, genitals and prostate gland. Finally, a semen specimen is obtained. The initial routine is always scheduled so that, according to generally accepted standards,[3] a period of abstinence of not less than three days and usually not more than five days will have occurred. Observing relatively sterile conditions, a masturbated semen specimen is obtained in a sterile glass container. The semen is allowed to liquefy and a culture is taken. A semen analysis is then performed following essentially the criteria offered by Falk and Kaufman.[3] Evaluations are made according to total volume, viscosity, turbidity, count per unit volume and total count, initial motility, longevity of motility and morphology.[4-13] Emphasis is placed on the last three criteria, these being considered today by most observers as the greatest determining factors in semen quality.

BASELINE ROUTINE IN THE FEMALE

If no obvious complete sterility deficiency in the male is ascertained, the study of the female begins. The results of the initial investigation of the husband are usually complete by the fifth day of the cycle. The wife, then, is first seen alone on day six or seven of this first cycle of study. A complete history is taken with deliberate repetition of certain of the points in the husband's history. The following pertinent points are discussed: previous professional advice including timing, frequency, position and temperature charts, childhood diseases, serious illnesses, operations, pelvic infections, venereal diseases, x-ray and radium exposure, recent marked weight changes, injuries, occupation, diet, drug and alcohol ingestion, tobacco consumption, menstrual history, previous marriage and resultant pregnancy, period of present marriage, period of contraception, period of trial and difficulties in coitus. A physical examination is then completed, including a thorough examination of the pelvis. A cervical culture is taken at that time.

The patient is then given instructions on the taking of daily vaginal smears throughout the first cycle, beginning that day. These smears are taken at approximately the same time each day except during the presumptive ovulatory phase, an eight day period during which slides are taken twice a day at twelve hour intervals. Since correlative studies are being conducted in all cases with basal temperature variations, the patient is given a prepared chart for recording temperatures and is instructed on taking daily basal rectal temperatures. The value of both vaginal smears and basal temperature changes as ovulatory indices is explained to the patient.

It is important to remember that this first cycle must not be wasted with reference to the possibility of pregnancy. Accordingly, from the menstrual history, the patient is given an arbitrary fertility schedule. Intercourse is scheduled for three times at thirty-six hour intervals preceded by a four day period of abstinence. This schedule is estimated on the basis of the fairly well accepted fact that ovulation occurs generally 14 ± 2 days prior to the onset of menses.[14]

Within the next five days the wife is seen again alone. First, she is put through a schedule involving a basal metabolic rate, complete blood count, urinalysis, and chest x-ray. A hysterosalpingogram is also scheduled, the time being chosen so as to fall between the end of the menses and before presumptive ovulation. This obviates the possibilities of extrusion of loose endometrial tissue into the peritoneal cavity, or of oil embolism through an open sinus and, at the same time, makes a disturbance of conception highly improbable. There is also the incidental chance that, according to numerous reports in the literature, conception may follow directly in the wake of this test for tubal patency.[15] Routine technic is employed in hysterosalpingography. Both aqueous and oil radiopaque media have been employed in this clinic. The salpingogram is done on an outpatient basis. When the procedure is completed, the wet films are shown and explained to the patient. When an oil medium has been employed, a twenty-four hour film is also taken.

The initial work-up on the female is completed at the end of the first cycle with an endometrial biopsy. A Novak suction curette for endometrial biopsy is used.[16] This is performed within the first few hours after the onset of menses. It is never performed prior to the onset of menses because

of the remote but ever possibility of disturbing a pregnancy. Although it is realized that menstruation causes a variable degree of loss of morphologic detail, the tissue certainly can be evaluated broadly if taken early enough.[17,18] At the time of this third and last visit of the wife during the first menstrual cycle, she presents her vaginal smears for the entire cycle. These are stained promptly by the Shorr technic[19] and later studied. At the next visit the stained smears are demonstrated and explained to the patient in correlation with the endometrial biopsy sections, temperature chart, length of the cycle and basal metabolic rate result.

DISCUSSION OF THE INITIAL ROUTINE

1. Evaluation of the semen.—A true picture of the general semen quality can be obtained only through analysis of a masturbated specimen. This should be collected in a clean wide mouthed glass container. There are at least two objections to the use of a condom specimen, namely, the spermaticidal action of the rubber and of the powder lining the rubber[9] and the marked loss in total volume that occurs during the transfer of the specimen to a glass container, especially if done prior to liquefaction. Withdrawal specimens are considered inadequate because of the possible loss of the first few drops of semen. This becomes markedly significant in the oligospermic male because of the well known fact that the bulk of the spermatozoa appear in the first portion of the specimen.[11] Also, if the vaginal secretions happen to be spermaticidal, a small drop might be included with the specimen and appreciably diminish the motility.

Sperm count, prior to recent years, was generally considered the most important feature of the semen.[20] It is now recognized as a factor only in that other defects may increase with lower counts.[3, 11, 21] The so-called low count has become even less important since the recent advent of a therapeutic conceptive aid for use where oligospermia is involved. This will be mentioned further under therapeutic methods.

Today most observers[3, 5, 7, 8, 10, 13] accept motility, longevity and morphology as the greatest determining factors, and this clinic places the emphasis on these three. Initial motility is always estimated within ninety minutes of specimen collection. Longevity of motility is measured over arbitrary intervals during the next twenty-four hours. In the morphologic studies, the staining technic and general criteria followed are those of Falk and Kaufman.[3] Essentially the overall quality of any semen specimen is adjudged finally according to the conclusions set down by these same workers.

2. Importance of cultures.—About nine months prior to this writing, Engle[22] first acquainted us with the value of cervical culture. Later Matthews and Buxton[23] reported on the bacteriology of the cervix in sterility. They demonstrated conclusively the in vitro spermaticidal effects of certain organisms cultured directly from the cervices of infertile patients. These bacteria were E. coli, Str. viridans and hemolytic streptococci. This spermaticidal effect apparently was eliminated completely on combining the appropriate antibiotic agent in a suspension of spermatozoa and spermaticidal organisms. The inference drawn from this work suggests the possible validity of local appropriate antibacterial injection of the cervix and cervical canal in cases of positive culture. As a result, in this clinic the cervix of every patient is cultured routinely in the initial work-up. When a positive report is returned, the culture is repeated within a month. The possibility of the male ejaculatory tract harboring these same organisms on a subclinical basis has been entertained by us. Certainly this assumes primary importance in an individual with any history of prostatitis. All semen specimens are cultured routinely in the initial work-up with repeat cultures within a month if the initial result is positive.

Treatment of patients with positive cultures, male and female, or female, is discussed later.

3. Elimination of the postcoital examination for spermatozoa.—The postcoital examination of the intracervical mucous as originally devised by Huhner was actually a test for sperm survival. Secondarily, it was a form of semen analysis that made active participation by the husband in the sterility study unnecessary. Unquestionably it is the poorest form of semen analysis. No diagnostic test in sterility can be more misleading. Yet many physicians have continued to accept this procedure merely to avoid embarrassing the husband.

Lane-Roberts et al.[24] and Williams and Simmons[25] in their studies of postcoital intravaginal and intracervical motility and survival demonstrate the futility of this type of examination. Intravaginal motility was shown to last but a few hours in the average female. Variability was marked in both fecund and infertile couples alike to such an extent that no conclusions could be drawn. This same variability with emphasis on the tremendous element of chance distribution in postcoital examinations was shown to exist with intracervical aspirations, thereby precluding any inference as to degree of fecundity. They concluded that the principle cause of decreased survival rate was unquestionably the result of intrinsic defects in the spermatozoa.

Williams[26] later summarily stated that a "consideration of clinical data concerning postcoital examinations fails to correlate such tests satisfactorily with the basic pathology of either the male or the female to the extent that they are highly useful in the clinical study of infertility." He stressed the absence of any alternative method comparable to a detailed study of the direct sperm specimen.

If there is a cervical contributing factor to low-

ered sperm motility, it can be recognized readily by competent and thorough examination of the cervix and treated accordingly. There is one exception; namely, the possibility of certain organisms detrimental to sperm survival inhabiting the cervix without clinical manifestations. This situation, as already discussed, is covered by routine cervical culture.

An attempt to ascribe value to postcoital examination of the intracervical contents[27] has appeared in the recent literature. Association is made between increased sperm survival and ovulation time. Certainly this appears to be a rather laborious and roundabout method of determining ovulation.

4. Value of routine blood counts, urinalyses and chest plates.—The role played by focus of infection in sterility has always been vague and different observers have associated varying degrees of importance with it. This has been especially true with reference to the male, where the thought has been that focus of infection may be an indirect factor in decreased sperm viability. Disregarding these beliefs entirely, no authority will deny the absolute necessity of maintaining the best possible general wellbeing in a sterile couple as a unit. Even when one factor can be fairly well ascertained as the primary etiologic element, the so-called combined fertility index must be sustained at a peak. This assumes even greater significance in those enigmatic cases in which no obvious factor in either partner can be discovered to explain the lack of fecundity. So it becomes of vital importance to determine the absence of anemia, chronic infection as reflected in the blood and disease of the pulmonary and urinary systems. A thorough physical examination covers, in general, most of the common remaining possibilities of impairment of the health of the individual.

5. Significance of adequate basal metabolic function.—Hypothyroidism, on a clinical or subclinical basis, has been variously described as the predominant sterility factor in from 5 to 10 per cent of males and 10 to 25 per cent of females in involuntarily barren couples.[28] Meaker[29] describes the adequate determination of basal metabolic rates in both partners as "indispensable items in a complete sterility study." Emphasis is placed on the remarkable frequency of low respiratory levels in involuntarily barren matings, explicable on a basis of mild hypothyroidism. Gametogenesis in itself is not obviously impaired by these lowered levels, Meaker comments, but the basic fertility of the spermatozoa and ova is decreased. He stresses that the basal metabolic rates should never be omitted, for example, just because the semen examination shows a normal picture or, if there is no apparent endocrine disturbance, or if the endometrial biopsy suggests normal function.

In accordance with these opinions, this clinic routinely obtains initial basal metabolic rates on both husband and wife. Therapy with dessicated thyroid is then started accordingly.

6. Omission of the Rubin's test for tubal patency.—The literature on tests for tubal patency, as written by Rubin and a myriad of other observers, is voluminous and need not be referred to here. Of the two methods in common use, uterotubal insufflation by air or carbon dioxide and transuterotubal injection of radiopaque media, only the latter is employed by this clinic. The authors feel that the former method does not allow for proper and complete evaluation and is too often subject to inaccuracies. The passage of gas, as manifested by a drop in pressure in the manometer, may mean patency of both tubes, patency of one tube, leakage around the cannula or uterine perforation. If one or both tubes are blocked, the point of obstruction is not demonstrable, an important element if the question of a plastic procedure arises. A hydrosalpinx cannot be demonstrated by air or gas. Hysterosalpingogram, in addition to showing whether one or both tubes are open or closed, and the obstructive point, if such exists, outlines the uterine cavity, shows the exact position of the tubes and demonstrates possible kinks in the tubes. Also, the liquid medium, as opposed to the gaseous, is more apt to overcome spasm. In event this cannot be done, relaxation usually will occur within twenty-four hours. If oil is used, it will be seen in the tubes and distributed throughout the pelvis in an x-ray film taken at that time. Many authorities feel that a hysterosalpingogram is indicated immediately without prior Rubin's test in a couple with a long standing sterility problem. This applies directly to the majority of cases in this clinic.

We are well aware of the complications associated with hysterosalpingography and of the resultant additional expense to the patient. However, we feel that routine employment of it in a sterility service such as this is more than justified.

7. Basal temperature chart as a diagnostic aid.—Probably the simplest and most popular method of determining the time of ovulation is the basal temperature record.[30-37] In this clinic all patients routinely take daily basal rectal temperatures with each menstrual cycle, starting on the day following the end of the menstrual period and ending on the day the next period begins. However, this method is only a secondary procedure which is used in correlation with other means of diagnosis. Ovulation is thought to occur, in the usual biphasic temperature record, in association with the period of temperature change.[31] Some observers[33] have stated that ovulation most likely occurs just before the rise, when the temperature is at its lowest point. However, Greenlich et al.,[32] in a series of cases in which laporotomy was scheduled at different times during the ovulatory phase of the temperature record, showed definite variations in actual ovulatory time. In a certain number of their cases, no ovulation had taken place after the drop but before the rise in temperature. However, ovulation had taken place in their series, with few exceptions, in those cases in which both a drop

and a subsequent rise in temperature had already been recorded. The marked possibilities of error in timing ovulation by temperatures were readily admitted. They concluded that the "events immediately preceding and following ovulation occur with somewhat different speed in different individuals and in the same individuals at different times." Farris[37] claimed that only in 45 per cent of cases could the basal body temperature be used as an accurate index to ovulation time. Sturgis and Pommerenke[38] summarily opined that routine temperature charts always demanded "skeptical and critical interpretation" to be acceptable aids in proving ovulation.

In the brief experience of this clinic, of the patients who present an unquestionably biphasic temperature chart, those who show a classical picture of temperature change during the ovulatory phase are in the distinct minority. The preluteal drop in temperature is far from being a regularly noted event and in as many cases as not the temperature rise occurs over a period of two or more days. The daily vaginal smear appears, at least to us, to be a much more accurate method for determining and predicting ovulation.

8. Endometrial biopsy as a diagnostic aid.—Martin[39] noted good correlation between basal temperature records and endometrial studies. A biphasic temperature curve was always associated with a secretory type of endometrium. The excellent work done by Rock and Hertig[14, 17, 40, 41, 42] on the endometrial biopsy has certainly shown that, in the normally ovulating woman, ovulation can be timed fairly accurately by studying the microscopic appearance of the endometrium. In general, these observers have demonstrated that ovulation occurs from twelve to sixteen days prior to the onset of menstruation. In effect, this means that the preovulatory phase of the cycle may be variable from one woman to another and in the same woman, but the postovulatory, or luteal, phase is always constant at fourteen plus or minus two days. This becomes an extremely important fact when one realizes how widespread is the misconception that ovulation occurs in the midcycle, regardless of the length of the cycle. Sturgis and Pommerenke[38] reiterate the opinions of Rock and Hertig, stating that the appearance of a progestational endometrium at the end of the cycle is perhaps the best proof of ovulation. They caution, however, by noting that any particular specimen applies only to the cycle in question.

In this clinic, more or less in accordance with the concepts of Noyes, Hertig and Rock,[18] a routine endometrial biopsy is taken in the initial work-up. Not only does it provide information as to the occurrence of ovulation in that cycle, but it denotes fairly accurately the degree of hormonal stimulation and any abnormality of the endometrium due to causes other than endocrine ones. Treatment of abnormal situations, as shown by the endometrial biopsy, will be discussed shortly. Obviously, it is not feasible to take a biopsy at the completion of every cycle. However, whenever possible, a repeat biopsy is done in cases in which other evidence strongly suggests the occurrence of an anovulatory cycle.

9. Vaginal smear as a diagnostic aid.—As an effective and relatively simple means of judging ovulatory time, we feel that, in the great majority of cases, the use of the vaginal smear is unsurpassed. Since the classic work of Papanicolaou[43] in 1933 on the changes in the vaginal smear during the menstrual cycle, this technic has steadily gained popularity. Papanicolaou's work associated vaginal smear changes at ovulation with operative evidence of ovulation. Rubenstein[44, 45] later demonstrated close correlation between the graphic ovulatory thermal shift of the classic basal temperature record and the characteristic smears of the ovulatory phase. He called the vaginal smear, except for operative methods, the finest procedure for determining ovarian activity. deAllende, Shorr and Hartmann,[46] in a comparison of the vaginal smear cycle of the monkey to that of the human, employed ovarian palpation and laporotomy to correlate ovulatory time with smear appearance.

In this clinic the evaluation of the vaginal smear throughout the menstrual cycle is made essentially according to the criteria of Shorr.[47] It has become increasingly apparent to us that cyclic vaginal smear series in sterility studies are, in general, much more difficult to evaluate as to ovulatory time than are those of women without sterility problems. Certainly this is to be expected since the incidence of ovarian functional abnormalities is much higher in any sterility group than in the normal. In spite of this, as a preliminary estimate, in from 70 to 75 per cent of the cases in this clinic ovulation can be estimated accurately within twenty-four hours and in many cases within twelve hours. As will be noted shortly, following the initial work-up, vaginal smears are repeated with every subsequent cycle to include only the ovulatory phase. A complete study of the vaginal smear as an adjunct to sterility study will be the subject of an independent report by the authors.

The importance of the vaginal smear in sterility studies is obvious. Besides fairly accurately gauging ovarian function, it identifies the most opportune time for copulation or insemination procedures. It is a relatively simple procedure and patients can easily and quickly be trained to take smears at home. It is more practical than vaginal biopsy.[48] Endometrial biopsy certainly cannot compare to it for simplicity and economy and obviation of interrupting a fresh conception. The main disadvantage in employing the vaginal smear is the necessity of well trained personnel to read and understand the smears. In addition, there is no question regarding the time that must be spent explaining the procedure to the patient, preparing the stains, staining and mounting the slides and reading the slides.

TREATMENT AND FURTHER MANAGEMENT

1. General Therapy.—A strict regime of health habits is instituted for both members of the couple at the outset.[49] These revolve around the well known principles of adequate nutrition, sufficient rest, regular exercise within limits, recreation and vacation and limitation of alcohol and tobacco consumption. Any concomitant disease condition that is uncovered is treated, employing consultants in other fields whenever necessary. Anemias are corrected with the necessary supplements. Business, social and family tensions are deliberately brought to light. The couple is made aware of the part emotional states play in infertility and the physician helps to eliminate them as factors. The local thermal environment of the male genital system is adjusted by such measures as eliminating tight clothing, especially "jockey shorts," excluding excessive bed clothes and suggested changing of occupation when excessive heat is associated with the work.

2. Specific regulation of sex habits.—In instances of sexual excesses, the frequency of intercourse must be decreased. Positional advice pertaining to intercourse is given. In an attempt to conceive, the wife should always be on her back with a pillow under her hips. Cautious but immediate withdrawal is urged following ejaculation. The same position used during intercourse is maintained by the wife with the knees in flexion for thirty minutes to an hour after coitus. Then the pillow may be removed and normal sleeping attitudes assumed.

Once a cyclic pattern is established in a patient, as determined by vaginal smears and temperature charts, a fertility, or intercourse, schedule may be determined with each cycle. Prior to the anticipated approximate time of ovulation, the couple is instructed to undergo a period of abstinence of not less than three nor more than five days. This allows ample time for full regeneration of mature spermatozoa and yet is a short enough period to prevent postmaturity with associated decreased potency of the spermatozoa. Although this regime of preovulatory continence is applicable to all couples in the group, it becomes of prime importance whenever a distinctly deficient semen specimen is a factor. In these cases regeneration of spermatozoa occurs much more slowly than in a highly potent male who might be capable of reproducing a mature specimen of semen in twenty-four to thirty-six hours.

As in every cycle, ovulatory time is then determined by vaginal smears, using the temperature record as an adjunct. The twelve hour smears are brought in daily by the patient during the ovulatory phase. These are stained and studied, using as guides slide series from previous cycles in the same patient. When the typical late preovulatory smears appear, a fertility schedule is devised for that cycle, with coitus or insemination, depending on the particular case, to occur at thirty-six to forty-eight hour intervals for three attempts. Actually two types of schedules are used. Where intercourse is employed, i.e., in those cases with definitely adequate semen, coitus is so arranged that the second attempt is almost coincident with ovulation. In cases in which insemination procedures are usually used, i.e., those involving questionably or distinctly deficient semen, the hope is to time the first insemination for from six to twelve hours prior to actual ovulation.

Any fertility schedule must be regulated according to the fertilizable life of the respective gametocytes. It is now a well known fact[50-53] that in the ovum this is probably less than six hours. However, Rubenstein et al.[54] have recently shown that normal spermatozoa may be found at the fimbriated ends of the tubes within thirty minutes after placement in the vagina. Emphasis is placed on the ability of normal spermatozoa to do this at any time in the menstrual cycle. Finally, they demonstrate active motility of spermatozoa throughout the female genital tract for at least fifty hours. Although this is probably true, whether or not these spermatozoa, after living in an increased thermal environment for a certain period of time, are still capable of fertilization is a matter of conjecture.

3 Regulation of body metabolism.—Oral dessicated thyroid has long been recognized [26, 29, 49, 55, 56, 57] as one of the greatest single weapons in the armamentarium of sterility therapy. Restoration of a more normal metabolic rate through thyroid therapy in the female[55] results in more regular cycles and more normal menses, permits conception where it was before impossible and aids in the prevention of abortion. In the male[57] the vitality and viability of the spermatozoa are increased. It is important to note that essentially the sperm count does not change, but the motility and longevity of the spermatozoa frequently increase remarkably. In this clinic, experience has shown that two months of thyroid therapy are usually necessary for the maximum change in the quality of the spermatozoa.

Meaker[29] attempts to maintain the basal metabolic rate of all sterility patients at approximately plus 10 per cent. According to the level of the initial basal metabolic rate, he has arranged a dosage schedule. The determination of tolerance is made by a repeat basal metabolic rate.

Thyroid extract is prescribed routinely for all patients with a basal metabolic rate of lower than plus 5 per cent. It has been our experience that the regulation of thyroid therapy must be individualized because of the tremendously variable response to thyroid from one patient to another regardless of initial basal metabolic rate. Dessicated thyroid is prescribed initially at one half grain a day. This dosage is increased by increments of one half grain every ten days until tolerance is just reached in the individual patient. Tolerance of thyroid is measured simply by a

record of the pulse rate over intervals of time and from the clinical signs of increased appetite, loss of fatigue and such. If mild tremor, insomnia or other early symptoms of overdosage should develop, the daily dose is cut by one half grain. Repeat basal metabolic rate is done only in those cases which show no response clinically to apparently more than adequate doses of thyroid. Occasionally it is also repeated in couples which have been in the infertility group for a year or longer without success.

A condition denoted as hypometabolism as opposed to hypothyroidism has been described in recent reports. Basically these are cases of initial low basal metabolic rate without change after several months of apparently adequate thyroid replacement therapy. Brown and Bradbury[28] have suggested the use of intravenous thyroxine as a possible remedy for this situation.

Mazer and Israel[29] emphasize the importance of continuing thyroid therapy once pregnancy has been achieved. Just as the developing normal germ cell requires adequate levels of thyroid, so does the growing embryo. Thus they stress the frequent incidence of thyroid deficiency in women with a tendency to abort, making replacement therapy in those situations a vital necessity.

4. Operative therapy in the female.—Conization of the cervix is perhaps the most useful and satisfying operative procedure in the treatment of sterility.[58, 59] This technic is employed in all cases of chronically diseased cervices in which the inflammatory lesion obviously extends into the endocervical canal. The objective is the replacement of an environment detrimental to the proper migration and survival of spermatozoa by a healthy, compatible passageway. When the cervical lesion may be described as an exocervicitis or erosion, most often due to an extension of growth of columnar epithelial cells from the endocervix, local therapy in the form of acid vaginal jelly is employed. Erosion is often secondary to an abnormal vaginal environment. When this is the result of local elements, including trichomonas, a four to six week course of vaginal jelly frequently is sufficient for cure. However, it is now well known[60] that erosion in many cases may occur in situations of endocrine imbalance. When an endocrine disturbance is discovered in the course of the routine work-up, hormonal treatment is instituted accordingly. If a constitutional disorder of this type is the causative factor, no amount of local therapy of the cervix can be expected to produce good therapeutic results. Electrocautery is never used in this clinic. If used in the treatment of superficial erosion, the basic etiologic factors are not removed and results are poor. In chronic endocervicitis, electrocautery can only touch on the surface of the infection while the deep rooted process of glandular disease continues as before.

Dilatation and curettage is employed by many sterility clinics on a purely empiric basis in old long term sterility cases in which either no obvious cause for infertility can be found or contributing factors have been treated adequately. In this clinic dilatation and curettage is resorted to only when indicated. Such indications might be abnormal bleeding not referrable to a constitutional disorder, an enlarged or assymetrical uterus to palpation or history of previous conception with subsequent inability to conceive when no other factors have since developed. Certain abnormal findings in the endometrial biopsy lead to a subsequent dilatation and curettage: (1) subacute or chronic inflammation which does not respond to a course of penicillin, (2) chronic fibrosis in the endometrium, seen most frequently in cases of one pregnancy sterility, and (3) endometrial polyps.

Laporotomy occasionally is resorted to in this clinic. Although we do not consider a retroverted uterus to be an important factor in sterility, nevertheless, conservative replacement measures are employed, principally via the Smith-Hodge type of pessary, in an effort to eliminate even the remotest possible factors. The main objectives of replacement are the resultant contact of the cervix with the posterior vaginal vault, the elevation of the prolapsed ovaries and the elimination of possible pelvic congestion. Suspension procedures to achieve these same results are not deemed worthwhile. Laporotomy is indicated in females with previous abdominal operative history and subsequent clinical signs of adhesions with hysterosalpingograms indicating kinking or closure or both of one or both tubes. Tuboplasty is done when blockage can be demonstrated at the fimbriated portion of the tube. No plastic procedures have been done in this clinic when closure is located in the isthmus or interstitial portion. Laporotomy is also performed when indicated in instances of tumors or cysts in the pelvis.[59]

5. Repeat hysterosalpingograms.—In event the initial hysterosalpingogram demonstrates blockage or partial closure of one or both tubes, including evidence from the twenty-four follow-up film if an oil medium is used, then the procedure is repeated. What before was a diagnostic method now becomes a therapeutic technic, the theory being that, on a purely mechanical basis, repeated episodes of pressure might break through a blocked area of tube. If an aqueous, rapidly absorbable medium was used in the initial salpingogram with no demonstration of spillage into the peritoneal cavity, or of filling of one or both tubes, a repeat salpingogram must be done with an oil medium to eliminate the possibility of tubal spasm. No diagnosis of intractable tubal closure is made before at least three salpingograms have been done.

6. Treatment in cases of positive cervical and semen cultures.—Therapy of a cervix from which organisms detrimental to sperm survival have been cultured consists of topical injection of the appropriate antibiotic. Either 1 gram of dihydrostrepto-

mycin or 400,000 units of procaine penicillin G, each in approximately 3 cc. of solution, are injected into the cervix and cervical canal. Covering the cervix first with a merthiolate solution, about one and one half cubic centimeters are injected by multiple punctures in circular fashion under the endocervical mucosa. A 22 gauge spinal needle is used for this, whereas a blunt tipped 16 gauge spinal needle is used to inject the remaining one and one half cubic centimeters slowly as high in the endocervical canal as the needle will go, into the uterine cavity if possible. Culture is repeated in from two to four weeks.

When a positive culture is returned in the male, and there is no coexisting clinical picture of prostatitis or other genital tract infection, 2 grams of aureomycin or terramycin are administered orally for five days. Culture is repeated in from two to four weeks.

No treatment is begun until adequate reports have been returned on both partners. If both should have positive reports, therapy is simultaneous. Sexual abstinence is maintained during the treatment period.

7. Testicular biopsy and genitourinary consultation.—Testicular biopsy is a relatively simple office procedure that should be done in every male with either aspermia or azoospermia. We feel that, in a highly integrated infertility study, when all factors in the female partner have been eliminated, this procedure should be extended to include males whose semen specimens show even moderate deficiency by accepted standards.

In cases in which biopsies show a normal or relatively normal intratesticular production of spermatozoa and yet the semen contains few or no spermatozoa, careful examination of the ejaculatory system is indicated.

Consultations are obtained in all cases in which clinical evidence of disease of the genital tract is found.

8. Progesterone replacement.—Proper nidation of a fertilized ovum and normal maintenance of a pregnancy through the early weeks depend on the efficient function of a corpus luteum.[61, 62, 2c] Progesterone deficiency results in an improperly stimulated endometrium. If the deficiency is mild, it may not interfere with implantation, but abortion may occur later because the underdeveloped endometrium cannot cope with the demands of the growing embryo. When the deficiency is more marked, even successful nidation may be impossible.

Criteria in this clinic for insufficient endogenous progesterone depend on the combined picture of poor luteal effects as seen in the vaginal smear and an immature progestational endometrium as noted by endometrial biopsy. Concomitantly a slowly rising basal temperature during the postovulatory phase, in the absence of excessive preovulatory estrogen effects, is almost always an associated phenomenon. Replacement progesterone therapy has been advocated solely on the basis of this type of temperature chart.[63]

When indicated, buccal progesterone is started with each cycle as soon as ovulation is diagnosed, in doses of 10 mg. per day. In repeat aborters and in patients with evidence of a moderately advanced progesterone deficiency, the dose is increased to 20 mg. per day if menses have not occurred eighteen days after ovulation. Once progesterone therapy is started, it is continued until the end of the first trimester, by which time normal placental function will have assumed production of progesterone.

9. Estrogen therapy.—The value of estrogen therapy in sterility is equivocal. Stimulation of the pituitary gland is the best reason offered for its use. Fevold, Hisaw and Greep,[64] working with immature rats, were able to demonstrate increased excretions of both follicle stimulating and luteinizing hormones following injections of natural estrogens. However, they also observed a depressed excretion rate after administering estrogens for an extended period of time.

The Smiths,[65] using mature rats, demonstrated that stilbestrol was one hundred times as active as estrone in stimulating the pituitary. They postulated that the action of stilbestrol, unlike estrone, was not effected by the presence of progesterone or androgen.

In a few cases with occasional anovulatory cycles, and in which the vaginal smears show an associated lack of normal estrogen stimulation, treatment has been attempted. In none of these cases have significantly low levels of pituitary gonadotrophin excretion in the urine been found. Sodium estrone sulfate in doses of 0.625 mg. or 0.1 mg. doses of stilbestrol have been used daily.

10. Treatment with gonadotrophins and gonadotrophin-like hormones.—With the exception of a few isolated reports,[66] therapy with hormones of this nature, both in the male[49] and the female, has so far proven disappointing. Geist, Gaines and Salmon,[67] in an extensive piece of work, studied the effects of various types of gonadotrophins on the human ovary with reference to ovulation. They could not show that any of the substances used could initiate follicular maturation or bring about growth of follicles containing normal ova to the point of maturation and ovulation.

Relatively pure extracts of FSH have been used in this series in females in rare instances as a measure of last resort. Three doses of 10 mg. have been injected at four day intervals starting about four days prior to expected onset of menses.

Simmons,[57] referring specifically to the use of gonadotrophins, gonadotrophin-like hormones and testosterone in the sterile male, states summarily that, except for thyroid, endocrine treatment is not indicated and "almost always is a futile attempt to improve inadequate spermatogenesis."

Gonadotrophins have never been used in the male in this clinic.

11. Treatment with vitamin B and C in the male.—There are no reports in the literature to date that prove conclusively any specific benefits in sterile couples from any form of intensive vitamin therapy in the presence of normal nutrition.[49] However, as a result of work now being done[68] with concentrations of the entire vitamin B complex in combination with ascorbic acid, all males in this clinic receive daily doses of these vitamins in the form of standard vitamin tablets. This experimental work is demonstrating a specific effect of significantly increased vitality in the spermatozoa.

12. Psychotherapy.—There is no doubt as to the role played by emotional conflicts in sterility. Perhaps the most acceptable concept is that of possible enhancement of infertility in a sterile couple because of organic changes resulting from unusual stress on the nervous, muscular and vascular systems associated with psychic conflicts. Marsh and Vollmer,[69] in a fine discussion of the subject, mention the significant incidence of conceptions in seemingly intractable sterility couples following a period of mental and physical relaxation. Typical examples are pregnancies that follow adoption, or a good vacation away from home. So it would seem that the most important psychotherapeutic role the gynecologist can play is to induce a change of attitude whenever extreme emotional tension is ascertained.

It is customary to include in the routine treatment of all patients a good vacation each year if it can possibly be arranged.

13. Measurement of gonadotrophin titers.—This diagnostic procedure is employed in certain cases following the initial work-up in both partners. The urinary excretion of pituitary gonadotrophin is measured by the method of ultrafiltration through a nitrocellulose membrane.[70]

Females selected for this procedure are principally those with endocrine dysfunction as the primary etiologic factor. There exists a copious literature[71-75] showing the associations of a moderate but definite rise in daily urinary gonadotrophin titer with ovulation. Judging from the established cyclic pattern of the patient in question, she is asked to collect daily twenty-four hour urine samples for a period of at least three days coinciding with ovulatory time.

Selection of males on whom gonadotrophin titer will be measured includes those with definitely deficient semen specimens. It has been strongly suggested that the normal effect of ejaculation is a significant elevation of the urinary gonadotrophin titer in the immediate twenty-four hour period following ejaculation.[76] Accordingly, the patient is asked to collect three successive twenty-four hour urine specimens with intercourse scheduled exactly in between the first and second specimens.

In this way a relatively abnormal pituitary gonadotrophin response can be detected in both male and female. Although this test is of academic interest primarily because of the marked inadequacy of present treatment with pituitary and pituitary-like hormones, it should be considered a salient feature in the complete evaluation of a sterile couple.

14. Hyaluronidase therapy.—Wilson and Aronson,[77] in a recent paper on methods of hyaluronidase assay in human semen, sum up the current literature on the use of this enzyme in male infertility. The physiologic role of testicular hyaluronidase in the liquefaction of the cumulus cells surrounding the ovum is an accepted theory. It also is generally agreed that the hyaluronidase content of the semen is proportional to the count. Some observers claim that low enzyme levels can exist with normal or high counts, but others deny this. No correlation has as yet been made between hyaluronidase deficiency and male infertility. Observations on therapy with hyaluronidase to date are confusing and highly inconclusive. Actually, the present inability to accurately assay this enzyme in the semen obviates proper appraisal of its possible value in therapy.

No hyaluronidase is being used in this clinic at present.

15. Homologous artificial insemination.—Whitelaw[78] originally reported the use of a plastic cervical cap in sterility involving oligospermic males. His results with even poor semen specimens were surprisingly good. A subsequent series on this subject has been presented recently by Hanson and Rock.[79]

The cervical cap is being employed by this clinic in all protracted sterility cases in which oligospermia of less than 60,000,000 per cc. exists. In addition, this practice has recently been extended to selected cases with no apparent abnormality of the semen and where other obvious sterility factors have been eliminated. These couples have had at least one year of therapy by other physicians and treatment in this clinic for from six to twelve months without success before capping technic is suggested.

In essence, the plastic cervical cap is a device which concentrates the entire semen specimen at the external cervical os without diminishing sperm survival time. The time of application of the cervical cap, as already discussed, coincides with the ovulatory phase of the cycle. Before insertion, a specially prepared douche is taken by the wife. A portion of this same douche solution is used to wash off the cap before application. In the technic used by the authors, the specimen is poured into the cap first and then the cap is placed manually on the cervix. A detailed report of the methods and results of this clinic will be published in the near future.

16. Heterologous artificial insemination.—Artificial insemination is being performed in well selected cases. Because of the success associated with extremely oligospermic specimens by use of

the cervical cap, no women will be accepted for artificial insemination by a donor's specimen unless no spermatozoa, or a negligible amount of dead spermatozoa, after trial of thyroid and vitamins B and C, are seen in her husband's specimen. The criteria used for the selection of donors follows, in general, those of Guttmacher.[80] The use of the vaginal smear in diagnosing ovulatory time reduces the total number of inseminations necessary.[47]

17. Advice regarding adoption.—Adoption is occasionally discussed in well selected cases. It is mentioned as a possible future course by the physician, but the actual decision must be made by the couple. The general criteria in the selection of cases includes a long history of sterility prior to this clinic, age factors and lack of success with the present methods after a protracted period of time. The patients are advised to continue with the clinic regardless of their decision.

18. Time element.—No stipulations have been made to date regarding the length of time that must pass without success before hope is abandoned. The only temporal rule now being followed requires every couple to remain with the clinic at least one year once the work-up has begun before failure can be accepted.

SUMMARY

A primary routine in management and treatment in sterility problems has been outlined. The basis of this type of infertility study is a logical step-by-step series of analytic examinations and procedures aimed at producing the best possible evaluation of the barren couple. Toward the achievement of the same end, it is hoped that this presentation of practicable methods and technics may provide a satisfactory baseline for patient evaluation by physicians dealing with these problems.

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Acknowledgements: Schering Corp., Buccal progesterone (Proluton); Ayerst, McKenna, and Harrison, Ltd., Sodium estrone sulfate (Premarin); Ortho Pharmaceutical Co., Plastic cervical caps and Nutri-sal and Nutri-discs for douches; E. R. Squibb and Sons, Dihydrostreptomycin; Holland-Rantos Co., Phenylmercuric acetate (Nylmerate) jelly, and Armour and Co., Follicle stimulating hormone extract.

SOMETHING TO VOTE ABOUT

American citizenship may be acquired in the delivery room or the courtroom, but it is fully achieved only in the daily realization of those privileges and duties that give man his rightful place in society. Yet when it comes to voting—the keystone of citizenship—Americans in the past have had a tragic apathy.

In 1948 there were approximately 96 million eligible voters in the United States. But in that year, only 49 million—about half of the eligible voters—cast ballots in the Presidential election! And the turnout at the polls has been decreasing!

Such a record in America, where free elections protect the rights and liberties of the individual, is more threatening to freedom than any threat from abroad.

In recent elections, according to the *Saturday Evening Post*,* the voters in leading countries exercised their right of franchise as follows:

Belgium	90 per cent
Italy	89 per cent
Great Britain	82 per cent
France	75 per cent
Japan	70 per cent
United States	51 per cent

Why are Americans so apathetic? Why do so many sit back and "let George do it"? Perhaps it is not apathy. Perhaps it is basically an unawareness of issues.

Japan had a new found individual freedom when 70 per cent of its voters cast their ballots. France and Belgium had just dropped the Nazi yoke. England turned to Churchill after years of Socialist rule. Italy arose against Communist infiltration. People in those nations really had something to vote about.

Americans have something to vote about, too. Daily the issues are growing more clearly defined. The world needs a strong, sure America—and only Americans can keep this nation strong.

The role is clear. Whatever path we want America to take, citizens at the grass roots must make the choice. We must study the issues. We must decide. We must vote. And as good citizens, we must do everything in our power to see that others register and vote, too—because today we Americans, of all the peoples of the world, have something vital to vote about!

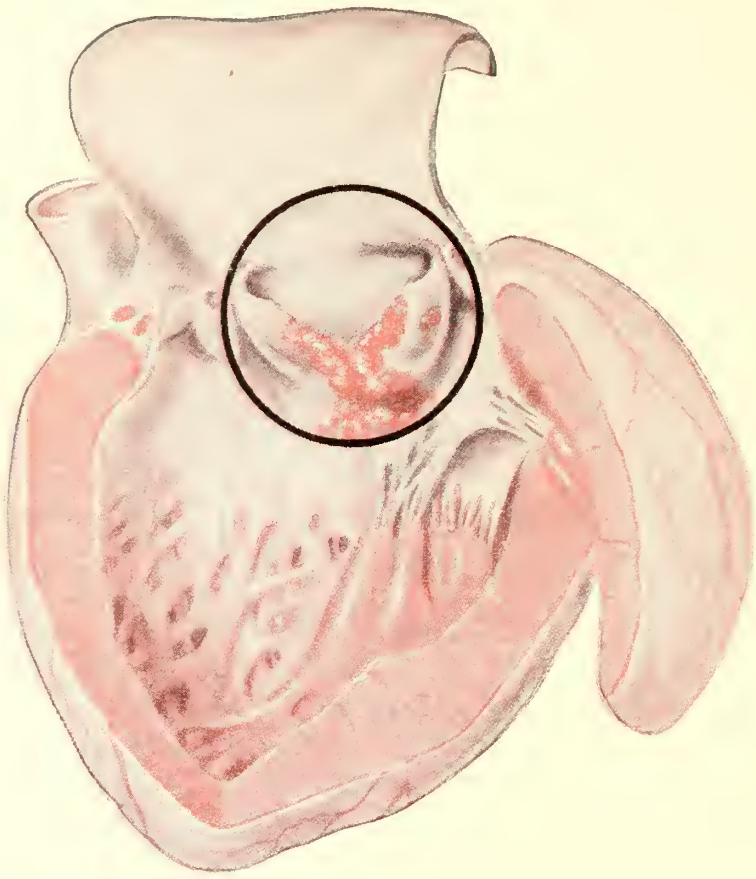
CORTISONE USED BENEFICIALLY IN TREATING CHRONIC SKIN DISEASE

Successful remissions of severe atopic dermatitis with the use of cortisone were reported in the March 15 *Journal of the American Medical Association.* This improvement, however, existed only as long as the hormone drug was being administered.

It was stressed that the drug should be used only in severe cases in which all other types of treatment have failed, and then only for periods of four to six weeks, as the undesirable effects of prolonged usage have not been sufficiently studied.

Relapses occurred in all patients shortly after treatment was discontinued, the doctors pointed out. Toxic effects of the drug were mild and subsided when treatment was stopped. The most objectionable feature of cortisone therapy was the development of a depressive reaction coincident with relapse.

* January 12, 1952. pp. 10, 12.



in acute bacterial endocarditis:

Terramycin therapy was instituted on eleventh day of illness and continued for 53 days in a case of Staphylococcus aureus septicemia with acute mitral endocarditis, complicated by left-sided hemiplegia, which failed to respond to sulfadiazine and penicillin. "Progressive gradual improvement ensued." Patient discharged cured on 59th hospital day with recovery "apparently complete except for a persistent apical systolic murmur and weakness of the left foot."

Blake, F. G.; Friou, G. J., and Wagner, R.R.: Yale J. Biol. and Med. 22:495 (July) 1950.

ANTIBIOTIC DIVISION Pfizer

Terramycin is also indicated in a wide range of

terramycin

Gram-positive Bacterial Infections

Lobar pneumonia • Mixed bacterial pneumonias
Bacteremia and septicemia
Acute follicular tonsillitis
Septic sore throat • Pharyngitis
Acute and chronic otitis media
Acute bronchitis • Laryngotracheitis
Tracheobronchitis • Sinusitis
Chronic bronchiectasis
Pulmonary infections associated with pancreatic insufficiency
Scarlet fever • Urinary tract infections
Acute and subacute purulent conjunctivitis
Acute catarrhal conjunctivitis
Chronic blepharoconjunctivitis not involving the meibomian gland
Abscesses • Cellulitis
Furunculosis • Impetigo
Infections secondary to Acne vulgaris
Erysipelas • Peritonitis

Gram-negative Bacterial Infections

Gonorrhea • Brucellosis
Bacteremia and septicemia
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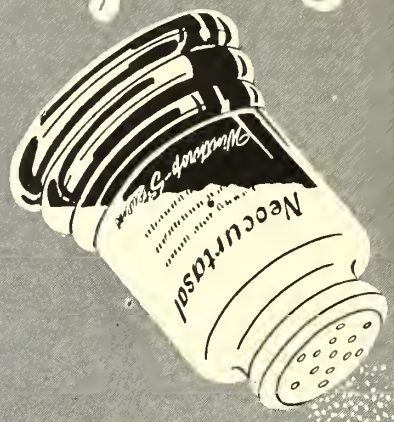
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Case Reports

INTESTINAL OBSTRUCTION DUE TO GALLSTONES

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CLAYTON
AND
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CLAYTON

This is a report of three cases of intestinal obstruction due to gallstones. Gallstones constitute the cause of approximately 2 per cent of all cases of intestinal obstruction. The figures vary from 1.3 per cent to as high as 7.8 per cent.[5] The mortality in this disease is high, approximating 50 per cent.[3]

A gallstone that is large enough to cause obstruction usually gets into the intestinal tract through a biliary fistula.[1] Some authors state that the stone must be greater than 2 centimeters in diameter before obstruction will develop.[4] However, stones that large have been reported to enter the intestinal tract through the common duct. Gallstones have invaded all organ systems and passages of the body. It is, however, more common that they pass into the gastrointestinal tract through a fistula. Many small stones undoubtedly pass by way of the common duct; these are too small to cause obstruction and they pass on out of the gastrointestinal tract. Intra-abdominal tumors or other extrinsic factors to the gastrointestinal tract may stop the gallstones.[4]

The pathogenesis of the rupture of gallstones into the intestinal tract starts with blockage of the extrahepatic duct system with subsequent empyema, gangrene, pericholecystitis, followed by periduodenitis and rupture of the stone through the wall. Abscess formation with necrosis of the intestinal wall and the formation of the fistula ensues. Or a pressure necrosis, cholecystitis, adhesions and erosion of the stone into the gastrointestinal tract may be the procedure of events.[6]

Necropsy figures[1] for the more common fistulas vary from: 44 to 70 per cent for those between the gallbladder and duodenum, 24.5 to 37 per cent for those between the gallbladder and the colon, and 2.3 to 4 per cent for those between the gallbladder and stomach.

These figures are for all causes of biliary fistulas, gallstones which cause over 90 per cent, duodenal ulcers and malignancies.

The most frequent site of obstruction is at the lower ileum but the lower jejunum is also a site of obstruction. A gallstone which gets into the colon either through the ileocecal valve or by way of a direct fistulous tract is sure to pass from the rectum.

The signs and symptoms are those of biliary tract disease, usually over a long period of time.[7] The patient may have a severe attack when the fistulous tract becomes complete after which he may have a cessation of his difficulties if he does not become obstructed.[8] But if the tract is obstructed from the ruptured gallstone the usual picture of intestinal obstruction develops.[2]

Women are more frequently involved than men,[2] as would be expected since the incidence of gallbladder disease is more common in women. It occurs more frequently in patients more than 50 years of age.[6]

The diagnosis is made on the basis of the usual signs and symptoms of obstruction but there is nothing specific about the obstruction itself which is characteristic to gallstones.[9] Roentgen studies are helpful. They show evidence of intestinal obstruction and they may reveal air in the biliary tree[1] or direct visualization of a gallstone.[2] The cause of the obstruction is not frequently diagnosed before operation.

Operation consists of longitudinal enterotomy along the amesenteric border of the intestinal wall with removal of the stone, followed by a transverse closure. Most surgeons believe the fistula bed should not be disturbed at operation. There are those who think it is desirable to close the fistula.[3]

Postoperatively the patients should be treated with intestinal intubation and suction, antibiotics and the body electrolytes should be kept balanced. Later, gastrointestinal series may demonstrate the fistulous tract. After a longer period of time, the fistulous tracts usually close[1] if there is no obstruction of the cystic or common ducts.

CASE REPORTS

Case 1. B.H., a 62 year old white female, was first seen at the St. Louis County Hospital on July 14, 1950, complaining of pain in the right side of her abdomen of twenty-four hour duration. The patient stated she had abdominal cramps, nausea and vomiting of twenty hours duration. She took an enema after the onset of cramping. There was no bowel movement following this.

The patient gave a history of "gallbladder trouble" of five years duration for which her private physician had been treating her. Her attacks consisted of bouts of indigestion, nausea and vomiting lasting two days at approximately six month intervals.

Physical Examination.—There was generalized abdominal tenderness which was more marked in the right upper quadrant and over McBurneys point where there was muscle guard. The abdomen did not appear to be distended. Bowel sounds were described as active but not high pitched.

Laboratory Studies.—The white blood count was 9,150 with 1 eosinophil, 74 segmented, 24 lymphocytes and 1 monocytic forms. The hemoglobin was 13.5 grams, 87 per cent. The diastase was 88.2 units; blood chlorides were 576 mg. per cent; and the nonprotein nitrogen was 41 mg. per cent. The urinalysis showed 3 white blood cells.

Roentgen Studies.—A flat plate of the abdomen showed some gas in the small intestine. No gas was seen in the rectum.

Hospital Course.—On July 15 the patient vomited 250 cc. of dark greenish brown material having a fecal odor. A Levine tube was inserted and suction started. A flat plate showed little more gas than previously but a few fluid levels were observed. At operation on July 15 there was a large mat of omentum and fibrous adhesions about the gallbladder region. The small bowell was distended to a point in the distal jejunum where a hard intraluminal mass was felt. An incision was made along the amesenteric border of the ileum and a gallstone 4.5 by 2.5 cm. was removed.

Postoperative Course.—The patient had an uneventful postoperative course except for a temperature elevation of 102 F. the day following surgery. The Levine tube was replaced with a Miller-Abbott tube which was left in place three days. She was discharged on July 31 and has remained well since.

Case 2. L.W., an 88 year old white female, was hospitalized on the Medical Service on August 14, 1946 with a five day history of vomiting. At the onset of her illness, the patient had diarrhea consisting of frequent loose bowel movements lasting three days. She had vague abdominal pain of a cramping nature. Her private physician was treating her for gastroenteritis.

The diarrhea stopped suddenly and two days before admission she had no bowel movements. The past history revealed an episode in April of 1937 of epigastric fullness, eructiation and constipation lasting for a few days, then subsiding.

Physical Examination.—There was a generalized tenderness over the abdomen. No distention and no muscle guard was present. The bowel sounds were normal. The heart was enlarged to the left, the blood pressure was 160/90.

Laboratory Studies.—The white blood count was 4,500 with 7 stabs, 55 segmented, 37 lymphocytes and 1 monocytic forms. The red blood count was 4.89 million and the hemoglobin was 16.5 grams, 95 per cent. The blood sugar was 101 mg. per cent; the nonprotein nitrogen was 142 mg. per cent; the carbon dioxide combining power was 49 vols. per cent. The urinalysis showed one plus albumin, 7 white blood cells and 3 epithelial cells.

Roentgen Studies.—A flat plate taken on August 15 showed several loops of gas distended intestine which appeared to be ileum. In the upright position fluid levels were seen.

Hospital Course.—On August 15 a Miller-Abbott tube was inserted after the patient vomited. She complained of abdominal cramps. There was mild abdominal distention and visable peristaltic waves were seen. Bowel sounds were hyperactive. A surgical consultation was asked for.

It was felt that the patient was obstructed, so she was transferred to the Surgical Service. Operation was performed on August 16. At operation, the small bowel was found to be dilated to within two feet of cecum where a hard mass was palpated in the ileum. A horizontal incision was made and a gallstone 4.6 by 2.6 cm. was removed.

Postoperative Course.—The nonprotein nitrogen which had been 125 mg. per cent on the day of operation came down to 65 mg. per cent on August 19, on August 21 to 45 mg. per cent and to 38 mg. per cent on August 27. The Miller-Abbott tube was removed on the third postoperative day.

The temperature rose to 101 F. degrees (rectally) on August 16 and then remained normal. The wound was dressed on August 23. A small amount of purulent material was seen in one portion of the wound. The edges were separated. The wound was dressed daily and the edges were kept apart for drainage. Clean granulation tissue appeared at the infected site which was superficial. The edges were freshened and closed on September 23.

A gastrointestinal series was done on September 3. This showed an irregular streak of barium extending lateral from the second portion of the duodenum. This was thought to be a biliary fistula. Otherwise the series was normal.

The patient was followed in the clinic. She had no further difficulties as regards this illness. She expired in March of 1951 due to arteriosclerotic heart disease.

Case 3. A.O., a 76 year old white female, was first seen at the St. Louis County Hospital on August 30, 1950. She complained of vomiting and generalized abdominal pain of six days duration. The vomiting had the odor of "bowel movement" for thirty-six hours before admission. The patient stated her abdomen was distended from the onset of her illness. She had had no bowel movement for six days. Enemas were given on the advice of her private physician; the return had always been clear.

The patient had no past history of any related symptoms.

Physical Examination.—The patient had a large ventral hernia the size of a large grapefruit. It could not be reduced but it was not especially tender. Elsewhere the abdomen was tender and distended. Bowel sounds were hyperactive and high pitched.

Laboratory Studies.—The white blood count was 7,250 with 19 stabs, 50 segmented, 29 lymphocytes and 2 monocytic forms. The hemoglobin was 13.5 grams, 87 per cent. The carbon dioxide combining power was 65 vols. per cent. The blood sugar was 260 mg. per cent, the nonprotein nitrogen was 60 mg. per cent and chlorides were 484 mg. per cent. The urine showed 5 white blood cells, five granular casts. There was no sugar present in the urine.

Roentgen Studies.—A flat plate of the abdomen showed moderate gaseous distention of the ileum. No gas was seen in the large bowel.

Hospital Course.—A Miller-Abbott tube was inserted. A flat plate on August 30 showed considerable gaseous distention and numerous fluid levels in the loops of ileum.

On the following day, the patient had a large bowel movement in which, she stated, "something passed which felt like a golf ball." In the stool was a 4 by 3 cm. gallstone. Much flatus passed and distention decreased.

Her temperature which rose daily to 102 F. degrees (rectally) then subsided to normal.

The Miller-Abbott tube was removed on September 3. The nonprotein nitrogen went down to 39 mg. per cent. The carbon dioxide combining power was 58 vols. per cent and the chlorides were 505 mg. per cent. The fasting blood sugar was 153 mg. per cent and the urine showed 2 plus sugar.

The patient has remained well since.

SUMMARY

Three case histories, each of intestinal obstruction due to gallstones, are presented. All three cases are women, all over 60 years of age. The first case was due to lodging of the gallstone in the distal jejunum. The second case was due to lodging of the gallstone in the terminal ileum. In the third case, the stone managed to get through the ileocecal valve and pass on out the rectum.

All three cases showed typical signs and symptoms of intestinal obstruction. In the two cases which were operated on, the diagnosis of obstruction due to gallstones was not made before operation. Two patients presented a previous history of biliary tract disease.

All three patients survived the episode.

St. Louis County Hospital.

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COMPLETE HEART BLOCK WITH STOKES-ADAMS ATTACKS

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The following case history is reported because of the unusual findings of syphilitic heart disease, complete heart block and Stokes-Adams syndrome, which caused frequent fainting spells. The etiology of these attacks remained unrecognized until the patient's first and final admission to this hospital.

CASE REPORT

M. S., a 53 year old white female, was admitted on February 2, 1951, to St. Louis City Hospital in a semicomatose condition. The history obtained from the patient's husband revealed that the patient was in good health until two years previously. At that time she had two episodes of fainting. Examination by her private physician disclosed a positive blood Kahn. For two years she received intramuscular bismuth every five days and intravenous arsenic every fifteenth day. The blood Kahn remained positive. Her fainting spells continued, initiated by a gasp, followed by loss of consciousness, stiffening of the body and falling. No history of convulsions, tongue-biting, or loss of sphincter control was obtained. The duration of each attack was from ten to fifteen seconds.

For six days prior to admission the patient had repeated attacks accompanied by headache, dyspnea and vomiting. She recognized that activity and the erect position seemed to initiate the attacks. On the day of admission the patient was pale, unable to move or speak, but appeared conscious.

Past History.—The past history revealed episodes of "fainting spells" during her late teens diagnosed as epilepsy, but she received no anticonvulsant medication and the attacks disappeared spontaneously. The patient had a stillborn baby by her first husband at the age of 20. There had been no pregnancies during eighteen years of her second marriage. Her present husband's serology was negative.

Physical Examination.—The blood pressure on admission was 90/60, pulse 16, respirations 24 per minute. Generalized pallor with mottled cyanosis was noted. The patient could be aroused easily but was unable to speak. The left pupil was slightly larger than the right and both reacted to light. Dehydration of the tongue and mucous membranes was evident. The lungs were resonant throughout with normal breath sounds. The cardiac apical impulse was palpable in the fifth intercostal space 9 centimeters to the left of the midsternal line. A soft blowing apical systolic murmur was heard. Examination of the abdomen and pelvis was entirely normal. No edema was present. All deep tendon reflexes were unobtainable. No pathologic toe signs were elicited. Urinalysis showed specific gravity of 1.010, trace of acetone and was otherwise normal. The leukocyte count was 22,650 per cu. mm. with a normal differential count. Red blood cell count: 6,680,000 per cu. mm., hemoglobin 17 gm. The initial electrocardiogram showed complete auriculo-ventricular dissociation with a rate of 15 per minute.

Course.—Nasal oxygen and intravenous glucose were started on admission. During the first hour a total of 1.4 cc. of aqueous epinephrine was administered subcutaneously after which the blood pressure was 170/90. The electrocardiogram showed persistant A-V dissociation with the auricular rate 120 and the ventricular rate 75 per minute. There was no clinical improvement. Small doses of epinephrine were continued. The following day the cardiac rhythm was regular at the rate of 108 per minute. The electrocardiogram at that time showed normal sinus rhythm with right bundle branch block.

Further laboratory findings showed the Kahn positive, 4 quantitative units. Corrected sedimentation rate: 33 mm. per hour. Repeat urinalysis: specific gravity 1.009, albumin 2 plus, sugar negative, occasional white and red blood cells on microscopic examination. The patient remained oliguric but unfortunately no accurate record of daily urinary output was possible due to her poor cooperation and incontinence. Blood chemistry findings were:

	February 3	February 8	February 11	February 14
Blood Urea Nitrogen Meq/L	52	120	136	144
Blood Sugar (mg. per cent)	216*	100		
Blood Chloride (Meq/L)		84	92	92
Blood CO_2 Combining Power Meq/L		19.4		

* Determined after administration of intravenous glucose.

The hospital course was progressively downhill. Repeated electrocardiograms showed persistence of normal sinus rhythm and right bundle branch block. On the sixth hospital day a loud pericardial friction rub became apparent. On the eleventh day the patient was quite agitated, requiring sedation. She expired quietly early on the twelfth hospital day.

At autopsy 500 cc. of clear yellow fluid was found in each pleural cavity. The heart weighed 430 gm. The epicardium showed a white fibrinous material over its surface. The valves were grossly normal. There was marked narrowing of the orifice of the right coronary artery. Distally the right coronary artery was narrowed but considerably larger in comparison to its orifice. Moderate atheromatous changes were seen in the coronary arteries. The aorta showed scattered atheromatous plaques. The ascending aorta had a bluish tint with longitudinal furrowing. The adventitial layer was increased, being 2 mm. in thickness. The lungs were firm and congested. The spleen, liver, gallbladder, bile ducts, pancreas and gastrointestinal tract were grossly normal. The right kidney weighed 70 gm., and the left weighed 200 gm. and were a red-brown color with a smooth capsular surface. The parenchyma was firm with good demarcation of the cortex. Test for amyloid was negative. Clear yellow urine was present in the bladder.

From St. Louis University Medical Unit, St. Louis City Hospital.

Microscopic Examination.—The entire myocardium and epicardium was infiltrated with polymorphonuclear leukocytes and monocytes. The intima of the aorta was markedly thickened with scattered foci of calcification and few foam cells. The muscular and elastic tissue elements of the media were lost and replaced by dense fibrous tissue. A few vasa vasorum were seen which were surrounded by collars of lymphocytes and plasma cells. The adventitia was hyalinized and again showed collars of lymphocytes and plasma cells around the vasa vasorum. Liver and lungs showed passive congestion. The kidneys showed hyalinized glomeruli in the subcapsular area. A few glomeruli showed adhesions between the glomerular tufts and the capsule. The convoluted tubules contained varying amounts of finely granular eosinophilic material. The collecting tubules were plugged with coarsely granular reddish brown casts. The entire parenchyma was patchily infiltrated with neutrophils and monocytes. The pathologic diagnoses were: (1) Syphilitic aortitis, (2) focal myocarditis with hypertrophy, (3) fibrinous pericarditis, (4) lower nephron nephrosis (interstitial nephritis with obstruction of the renal tubules by casts), (5) passive congestion of the lungs, liver and spleen.

DISCUSSION

This 53 year old patient fulfills the criteria for the diagnosis of syphilitic heart disease and in all probability this was the cause of her symptoms. She apparently had had recurrent Stokes-Adams attacks with complete heart block for two years before death. One or more prolonged episodes of heart block accompanied by a shocklike state precipitated renal failure due to so-called lower nephron nephrosis. The patient failed to recover in spite of conversion to sinus rhythm and the absence of further cardiac symptoms.

The clinical syndrome of ventricular asystole and unconsciousness has been known for many years, the first complete description being made by Morgagni in 1760 with subsequent reports by Adams in 1826 and Stokes in 1846.

Experimentally, complete auriculo-ventricular block may be produced by cutting, clamping, ligating or injuring the AV node or upper portion of the bundle of His. The auricles continue at their usual rate in response to stimuli from the sino-auricular node, however, after a short recovery period the ventricles begin to beat slowly and regularly from 12 to 40 times per minute, which is the so-called idioventricular rhythm. The electrocardiogram in both experimental and clinical complete heart block shows virtual regularity of the auricular and ventricular activity with continual variation in the P-R interval; the auricular rate is usually normal at from 70 to 90 per minute with a regular ventricular rate of from 20 to 40 per minute. The QRST complex represents the ventricular response to a new pacemaker, either in the A-V junctional tissue, in the bundle of His or, occasionally, somewhere in the ventricular musculature. The QRS complex in complete heart block is usually of normal configuration if the impulse arises in a center within the A-V node or bundle of His so that the course of the stimulating impulse is through the normal conduction mechanism. If the pacemaker arises in an ectopic focus in the ventricular myocardium or in one or the other bundle branches the resulting QRS complex is widened, slurred and notched. Occasionally complete heart block is due to bilateral bundle branch block forming bizarre ventricular complexes with a tendency to shift its configuration from the left to right type of bundle branch block.[1]

The P waves may be normal or at times complete heart block may occur in the presence of auricular fibrillation, flutter or tachycardia.[2] In rare instances during the so-called supernormal recovery phase of the ventricles a P wave early in diastole may be conducted while those later are blocked. This has been related to the occurrence of premature beats at this stage of the cardiac cycle and produces a slow coupled rhythm. There is nothing characteristic related to the T waves seen on the electrocardiogram of complete heart block. The T waves following bizarre QRS complexes are usually inverted similar to T waves following ventricular extrasystoles.

The primary cause of permanent complete heart block is one of the chronic forms of heart disease. Digitalis in full or excessive dosage may cause temporary complete A-V block. Quinidine is a rare cause. Occasionally instances have been reported following acute infectious diseases particularly acute rheumatic fever and diphtheria, although any acute toxic infectious diseases may cause temporary complete heart block. Rare instances of complete block may also accompany supraventricular tachycardia, presumably due to functional fatigue and refractoriness of the A-V node and bundle of His. Reflex vagal stimulation may cause complete A-V dissociation of short duration such as produced by carotid sinus stimulation; however, this occurs almost always in the presence of some predisposing cause, usually a form of chronic heart disease with an apparent or an underlying conduction defect already present. Presumably the similar effect produced by digitalis is largely through this vagal mechanism.[3]

Arteriosclerotic coronary heart disease is the chief cause of permanent complete heart block by causing vascular insufficiency of the conduction mechanism. Transient heart block may follow acute coronary occlusion. In the majority of such cases the occlusion or constriction is of the right coronary artery since a small branch of this vessel supplies the A-V node and upper portion of the bundle of His in more than 90 per cent of hearts. Massive infarction of the interventricular septum denotes occlusion of both left and right coronary branches and may be extensive enough to cause complete heart block. It is believed that the A-V node and bundle of His are more sensitive to anoxemia than undifferentiated myocardium due to its more specialized nature, and partially inadequate blood supply may cause total functional impairment without apparent histologic change. This

would account for the much greater frequency of complete heart block in persons of the older age group with more advanced arteriosclerotic changes of the coronary arteries.[4]

Pathologically such hearts may show advanced sclerotic and degenerative changes in the region of the A-V node, although, as noted previously, such changes may not be demonstrable. Schnur[5] reported one case of alternating complete heart block, asystole, and ventricular tachycardia which at postmortem showed moderately severe coronary sclerosis. There was a fibrotic hyaline area in the junctional tissue just above the interventricular septum. On further investigation they found the same thing in presumably normal hearts. He refers to Maximow and Bloom, who state that the A-V node and upper part of the bundle of His are situated in the so-called fibrous trigone of the heart. Schnur postulates that other reported cases have attributed complete heart block to this normal histologic finding.

Acute rheumatic heart disease may be accompanied rarely by complete A-V dissociation. Calcific aortic stenosis, which is nearly always rheumatic in origin, may produce complete heart block by extension of the calcific process from the aortic ring to the junctional conduction tissue near the septum. It has been postulated that block may also be due to anoxia of the bundle caused by functional coronary insufficiency.

Syphilis is an uncommon cause of complete heart block. The defect may be produced by a gumma infiltrating the conduction system, to gummatous myocarditis extending from the aorta or by syphilitic aortitis with narrowing of the coronary ostia causing coronary insufficiency. Spain and Johannson[6] reported three cases of heart block, only one of which was complete, which were found to have localized gummata of the interventricular septum near the base of the heart.

Fishberg[7] states that complete heart block due to congenital causes accounts for about from 10 to 15 per cent of the total incidence in all age groups and about 50 per cent of all the cases occurring before the age of 50. There may be a defect in the course of development of the junctional conduction tissues and almost all the reported cases have been asociated with interventricular septal defects. Congenital heart block in children associated with periods of ventricular standstill must be differentiated from epilepsy. The more severely involved cases of congenital heart disease in children usually show signs of cardiac disease although there are undoubtedly rare instances of complete heart block due to congenital causes which cause no cardiac disability.[8]

From the clinical standpoint, complete heart block is usually well tolerated and frequently produces no symptoms and is discovered by accident. Effective circulation is nearly always maintained with a ventricular rate of more than 20 per minute. The prolonged diastole with increased filling of the ventricles results in an augmented stroke output which maintains a normal minute volume output. When the pause between contractions exceeds 5 seconds the patient may experience dizziness, vertigo, faintness or syncope. Doane and Krasnoff[9] reported one case with recurrent profound syncope with a ventricular rate of 9.8 per minute which they claim is the slowest ever recorded during complete heart block. Some complain of palpitation and precordial discomfort. At times the person may be well compensated at rest but not under the stress of exercise. Other diagnostic features will be discussed later.

The Stokes-Adams syndrome may be defined as attacks of syncope with or without convulsive seizures due to prolonged asystole of 5 seconds or longer. During an attack the patient becomes pale, loses consciousness and is found to be pulseless. If the ventricular standstill lasts more than 15 seconds the respiration becomes deep and stertorous with generalized convulsive movements. Cheyne-Stokes respiration may be noted. With the resumption of ventricular activity the twitching disappears, the pulse returns, normal color is restored and breathing becomes quiet as consciousness is slowly regained. Nonfatal paroxysms rarely exceed 60 seconds in duration.

The attacks usually occur without warning or apparent cause due to the delay in the establishment of idioventricular rhythm in the transition from sinus rhythm to partial or complete block. Occasionally there may be failure of ventricular contractions during the course of complete heart block. This is usually attributed to nervous influences or coronary insufficiency. Stokes-Adams attacks may occur during periods of asystole in conjunction with paroxysms of ventricular tachycardia or fibrillation associated with complete heart block. Syncope due to cardiac standstill may occur in normal hearts as a result of strong vagal reflex stimulation from a sensitive or compressed carotid sinus or, rarely, in instances of sino-auricular block. These episodes are nearly always of short duration.[3]

Schnur has pointed out that other cardiac arrhythmias may be responsible for Stokes-Adams attacks in patients with heart block. He quotes Parkinson et al. who reviewed sixty four cases of Stokes-Adams syndrome and found that 33 per cent were due to ventricular tachycardia or ventricular fibrillation or both. Schnur advocates the adoption of the definition of Stokes-Adams syndrome formulated by Parkinson and his coworkers: "It is the name applicable to patients with heart block who suffer from recurrent attacks of unconsciousness due to ventricular standstill, ventricular tachycardia, ventricular fibrillation or a combination of these."[5] Scott and Sancetta[10] reported a remarkable case of complete heart block in whom recurrent Stokes-Adams attacks of 30 to 180 seconds occurred. On investigation the attacks were found to be initiated by defecation.

Gentle digital dilatation of the rectal sphincter reproduced the attacks during which an impure ventricular tachycardia replaced the complete heart block. These authors emphasize that in some instances the electrocardiogram may be the sole means of determining the cardiac mechanism responsible for the seizure. The correct choice of therapy depends upon the underlying pathologic rhythm.

Aside from the slow ventricular rate one of the most reliable diagnostic signs of complete heart block is the finding of variation in the intensity and quality of the first heart sound which is due to the changing time relationships between the auricular and ventricular contractions and consequent change in position of the auriculoventricular cusps. Rarely faint auricular sounds may be heard. Auricular waves may be demonstrable in the jugular pulse at a faster rate than the radial pulse. Exercise produces little or no increase in the cardiac rate in complete heart block which seems to be true only in this condition. Rarely calcification of the septum may be demonstrable by x-ray but this is not a reliable diagnostic method.

The diagnosis of Stokes-Adams attacks due to ventricular standstill is relatively easy if the patient is seen during an attack, found to have no pulse or audible heart sounds, with subsequent resumption of heart beat and alleviation of the symptoms. Auricular waves may be visible in the jugular pulse during ventricular asystole. Stokes-Adams attacks are relatively longer in duration than syncope produced by vagal cardiac standstill. Episodes associated with other ventricular arrhythmias may require electrocardiographic confirmation for diagnosis.

The prognosis of complete heart block in association with heart disease varies according to the type and severity. Patients with congenital heart block who survive childhood usually have a good outlook for a normal life span. As noted previously, the highest incidence is in the arteriosclerotic age group and in the absence of Stokes-Adams attacks eventual heart failure is the commonest cause of death. The development of Stokes-Adams syndrome along with complete heart block is usually a serious omen. Often the attacks become more frequent and sudden death is the rule. Heart block in syphilitic heart disease may occasionally disappear following therapy, presumably due to resorption of a gumma which interferes with the conduction mechanism, but these instances are extremely rare.[1]

When complete heart block is discovered all drugs should be stopped, particularly digitalis, quinidine and opiates. If their use is essential, the dose may at times be reduced without the recurrence of block. Specific therapy is probably indicated only if the patient is having symptoms. During the acute attacks adrenalin is the treatment of choice, giving 0.3 to 1 cc. subcutaneously which may have to be repeated in from 30 minutes to 3 hours. Adrenalin 1:500 in oil may be given intramuscularly three to six times daily for a more prolonged effect. Intracardiac adrenalin has been used in rare instances but this is a heroic measure and is contraindicated if syncope is due to ventricular tachycardia or fibrillation. Atropine is specific for heart block due to vagal influences and may be given safely in combination with adrenalin when in doubt. Ephedrine is most commonly used for chronic complete heart block or for prophylaxis against recurrent Stokes-Adams seizures. Paredrine has also been found to be effective without as much central nervous system stimulation as is frequently produced by ephedrine.[11] Both of these drugs may be used with atropine or mild sedation if found to be more effective. Barium chloride may be tried if other measures fail, but its efficacy is debatable. Thyroxin, caffeine, coramine and metrazol have been used both clinically and experimentally without benefit. Digitalis is indicated in complete heart block whenever signs of failure appear. When the A-V block is already complete, digitalis cannot possibly have any further effect upon the conduction mechanism. Occasional instances have been found in which the use of digitalis caused the disappearance of complete block by relieving the anoxia of the conduction mechanism secondary to coronary insufficiency.

SUMMARY

1. A case report of complete heart block and Stokes-Adams attacks complicating syphilitic heart disease has been presented.

2. Etiology, prognosis and treatment of complete heart block and Stokes-Adams attacks have been covered in the discussion. Attention is drawn to the important fact that Stokes-Adams attacks may at times be caused by ventricular arrhythmias. Correct differentiation of the underlying cardiac defect is frequently difficult.

3. There have been no recent advances in the treatment of complete heart block.

1515 Lafayette.

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PRESIDENT'S PAGE

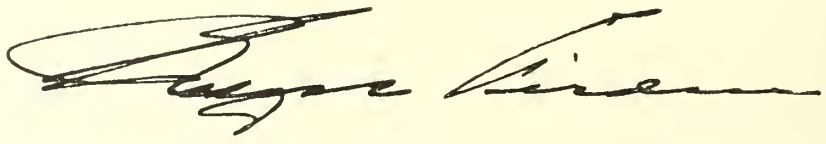
As the new administration assumes its duties, I would like to dedicate this brief message to all of the members, committeemen, councilors, officers and friends of the Missouri State Medical Association who have worked so diligently and given so much of their time helping to solve the many problems which have confronted us in this last year.

I am deeply cognizant of the changing times with the many threats to our profession, a profession which has inherited a proud tradition of service, integrity and attainment, unequaled by any other, and which has been carried on by men imbued with faith and hope and charity, striving ever to increase their knowledge and ability. This to me is a worthy tradition and achievement, the loss of which this nation can ill afford to sustain, something worth fighting for, and something for which there is no substitute, political or otherwise.



Only a relatively few men and women are granted the privilege of being physicians. But this very fact demands more of us than it does of ordinary men and entails obligations to our profession and our fellowmen.

I wish space would permit mention of all of the names of the men who have so willingly acknowledged their obligations and who have striven so forthrightly to preserve our principles for which so many men have labored in the past, but it will have to suffice to say that I consider it both a pleasure and an honor to have been your President for this brief year. I think that we can look to the future with confidence if each and every man in this Association continues to labor for the betterment of our profession and keeps himself alert to all the changes which may befall us so that we may unselfishly and wisely consider how best to conduct ourselves for the benefit of everyone concerned.



Editorials

HEALTH RECORD FOR 1951 IS GOOD

While the mortality rate for this country in 1951 was slightly greater than that for 1949 and 1950, sufficient causes for the small increase are evident and do not reflect a decrease in health standards. Figures recently compiled by the Metropolitan Life Insurance Company on its industrial policy holders give these indications and the company's policy holders represent a cross section of the population.

In 1949 and 1950 there was the lowest mortality rate ever recorded, 6.4 per 1,000. In 1951 this figure was 6.5 per 1,000. An epidemic of respiratory disease early in the year, the heavier toll of deaths incidental to the war in Korea and the increase of persons at older ages are given as the reasons for the slight increase. The mortality rate in 1951 was lower than any year prior to 1949 and was little more than half the rate of forty years ago.

The expectation of life at birth, excluding deaths from enemy action, in the industrial population increased about one fifth of a year in 1951, reaching a new high of 68.5 years. The improvement in mortality has increased the average length of life by five years in the last decade and by ten years since 1930. Under the mortality conditions of 1911, the expectation of life at birth was 46.6 in the industrial group, which was six and a half years less than the figure given for the general population of the United States. This difference between the industrial group and the general population has lessened during the year since 1911.

At most age periods the death rate in 1951 changed little from the year before. However, females had a somewhat more favorable experience than males. Among white females the death rate tended to be lower last year than in 1950 throughout the greater part of life, whereas among white males the tendency was in the other direction. The outstanding feature of the age picture is the sharp rise in mortality among men at the main military ages. At 15 to 19 years the death rate among white males was 9 per cent above that in 1950; at ages 20 to 24 the rise was 47 per cent. Compared with 1949, just prior to the Korean war, the increases were 31 per cent and 62 per cent for these two age groups.

The mortality from tuberculosis continued its rapid decline in 1951, dropping to a low of 17.6 per 100,000. This is 15 per cent below the previous minimum established the year before and little more than half the rate of only five years ago. Since 1911 the death rate from tuberculosis in the industrial population has been reduced more than 90 per cent.

The high incidence of the acute respiratory conditions early in the year brought a small increase in the mortality from pneumonia and influenza. The death rate from influenza rose from 1.8 per 100,000 in 1950 to 2.5 in 1951; for pneumonia the rise was from 15.3 to 15.7. The combined rate for the two diseases, 18.2 per 100,000, was nevertheless below that in any year prior to 1950. Prior to the introduction of serum therapy and of chemotherapy, pneumonia mortality was consistently four to five times as high as it was last year.

The principal communicable diseases of childhood as causes of death are virtually eliminated. Measles, scarlet fever, whooping cough and diphtheria together registered a death rate of only 0.5 per 100,000, establishing a new low record. In 1911 the rate for this group of diseases was 58.9 per 100,000.

Poliomyelitis was less prevalent and recorded a lower death rate in 1951 than in 1950. The death rate from this disease was 0.8 per 100,000, the lowest since 1947. The number of cases reported in the general population of the country dropped from 33,350 in 1950 to 28,665 last year.

The death rate from the complications of pregnancy and childbirth fell to a new low in 1951, despite a rise in the birth rate. In the general population of the United States, maternal mortality has been reduced by about two thirds in the last five years.

The crude death rate from malignant neoplasms showed virtually no change between 1950 and 1951. When allowance is made for the increase in the proportion of older people in the group, the mortality actually shows a decrease. For white males, the adjusted rate was a shade lower in 1951 than in the year before; among white females the reduction was 2½ per cent.

Diabetes registered a decline of 5 per cent in the crude death rate from 1950 to 1951.

The crude death rate from the diseases of the heart, arteries and kidneys, like that for cancer, recorded an increase between 1951 and the year before, but the age adjusted rate showed a small decline.

The death rate from accidents was 5 per cent higher than in 1950. Motor vehicle fatalities remained at about the same level as in 1950, while the death rate from home accidents declined. Suicide and homicide showed decreases.

The death rate from enemy action in 1951 was 6.2 per 100,000 compared with 2.9 in the preceding year.

Organization and Economics

NEWS NOTES

Drs. Leo J. Hartnett, Robert J. Crossen, A. N. Arneson and Willard M. Allen, St. Louis; Buford G. Hamilton, Jefferson City, and Hugh G. Hamilton, Kansas City, will appear on the program of the fifth American Congress on Obstetrics and Gynecology which will meet March 31 through April 4 in Cincinnati.

Willard O. Thompson, M.D., Chicago, will present the third annual Dr. F. G. Thompson, Sr., Lecture, at the Thompson, Brumm & Knepper Clinic, St. Joseph, on May 29 at 8:00 p. m. Dr. Thompson will speak on "Uses and Misuses of Sex Hormones."

MUSINGS OF THE FIELD SECRETARY

The seventh National Conference on Rural Health, sponsored by the Council on Rural Health of the American Medical Association in cooperation with national farm organizations, was held in Denver, Colo., February 28 to March 1. The attendance this year did not measure up to that of either of the last two conferences, namely, Memphis in 1951 and Kansas City in 1950. It may be that placing these conferences too far on the extremities of the Middle West will decrease the attendance. The Middle West is considered by many to be the center of the rural health picture and, if so, national conferences pertaining thereto should be better attended when held in more centrally located cities of that area.

The theme of the entire session "Help Yourself to Health" was well carried out in the formal presentation of the program and in subsequent discussions. Few of those who spoke at the conference passed up the opportunity to emphasize the need for "helping ourselves" in contrast to calling on and expecting the federal government to step into the picture. This all was fine, but would it not help more if ways and means were devised for this type of discussion and information to all on ears that are not so receptive instead of mostly on ears already in tune to the basic philosophy of Americanism?

The program featured doctors, farm leaders, agricultural extension leaders and health educators who not only presented their own ideas of improving rural health but told of projects and experiences in this respect from their own communities.

Dr. Kenneth Kaisch, a young physician from Philip, South Dakota, put in succinct terms the factors involved in small towns securing physicians and then in keeping them. He told of his own experiences in selecting a location and then of his more than a year's experience in practicing in his selected location, Philip, South Dakota, population 900. He gave the following reasons for selecting a practice location in a small town over a city: (1) difficulty of getting one's patients in a hospital in the city, (2) one knows his patients better in smaller towns, (3) recreational facilities such as fishing and hunting closer at hand in small towns, (4) patients shop around more for medical care in the cities, and (5) less expensive to live and practice in smaller towns.

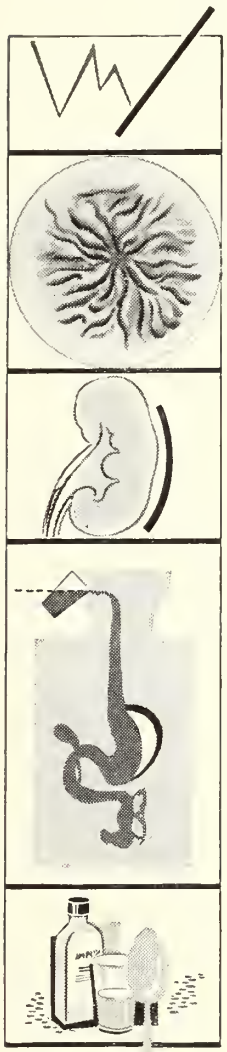
On the first day of the session, the program was principally for members of state committees on rural health and farm extension service health educators. The theme of this particular program was "The Physician as a Citizen." Dr. A. E. Spelman, Smithville, Missouri, Chairman, Committee on Rural Medical Service, Missouri State Medical Association, spoke to the group on "The Physicians' Responsibilities to Health Councils." He brought out the necessity for doctors to be informed fully as to the purposes and proposed activities of local health councils so that they may aid intelligently in the proper direction of the health activities of these councils.

NEW MEMBERS

Bauer, Robert A., M.D., St. Louis.
Berry, John W., M.D., St. Louis.
Brodeur, Armand E., M.D., St. Louis.
Burke, Robert J., M.D., St. Louis.
Calkins, William G., M.D., Kansas City.
Canlas, Emilio M., M.D., Poplar Bluff.
Casebolt, Buford T., M.D., Kansas City.
Collodi, George A., M.D., St. Louis.
Cortrino, John J., M.D., St. Louis.
Coughlin, Bertrand D., M.D., St. Louis.
Cox, DeWitt W., Jr., M.D., St. Louis.
Dawson, Orville L., M.D., St. Joseph.
Efron, Joseph, M.D., Rock Hill.
Ellis, Elizabeth H., M.D., Poplar Bluff.
Ellis, Ralph Victor, M.D., Poplar Bluff.
Emerson, Reynolds L., M.D., St. Louis.
Exon, C. Stuart, M.D., Jefferson City.
Forbes, Kenneth A., M.D., St. Louis.
Fuller, Charles D., M.D., St. Joseph.
Gibstine, Marvin H., M.D., St. Louis.
Harting, Hugh R., M.D., St. Louis.
Haskell, Ralph E., M.D., Norborne.
Hazen, Robert M., M.D., Kansas City.
Henrickson, William E., M.D., Poplar Bluff.
Hensley, Daniel R., M.D., Hayti.
Hofstatter, Lilli, M.D., St. Louis.
Holt, Earl P., Jr., M.D., St. Louis.
Hopkins, Thomas S., M.D., Nevada.
James, Norman A., M.D., St. Louis.
Karandjeff, A. D., M.D., St. Louis.
Keating, John U., M.D., New Orleans.
Keezer, William S., M.D., St. Louis.
Keller, Maurice J., M.D., St. Louis.
Kirk, John S., M.D., St. Joseph.
Kollar, Charles S., M.D., Cape Girardeau.
Lenzen, John L., M.D., St. Louis.

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Marder, Sumner N., M.D., St. Louis.
Mitchell, Roy E., M.D., St. Louis.
Natoli, William J., M.D., St. Louis.
Peden, Burnet W., M.D., St. Louis.
Pruett, Charles E., M.D., St. Louis.
Rachlin, Maxwell, M.D., St. Louis.
Ricketson, George M., M.D., Hayti.
Russell, Barbara E., M.D., Rolla.
Samson, Ralph B., M.D., Kansas City.
Sargent, Frederick K., M.D., St. Louis.
Sauer, Gordon C., M.D., St. Joseph.
Seidel, Joshua, M.D., Excelsior Springs.
Shoss, Milton, M.D., Cape Girardeau.
Skaggs, Thomas R., M.D., Mountain View.
Stacey, Wallace R., M.D., Independence.
Stevenson, Alan J., M.D., St. Louis.
Sweiger, James H., M.D., Maysville.
Tarvydas, Francis, M.D., California.
Trueblood, Alva C., Jr., M.D., St. Louis.
Van Wetzinga, R. J., M.D., St. Louis.
Wallace, M. Marvin, M.D., St. Louis.
Wallach, Elliot A., M.D., St. Louis.
Watts, Byron E., M.D., St. Louis.
Webb, Watts R., M.D., St. Louis.
Wendell, Margaret R., M.D., Columbia.
Werner, Franklin C., M.D., Kansas City.
West, Joseph Warren, M.D., St. Louis.
Wiles, Jack Nelson, M.D., Kansas City.
Winters, F. A., M.D., St. Louis.
Wood, Edward P., M.D., Toledo, Ohio.
Yaeger, Gerald A., M.D., St. Louis.

DEATHS

Handley, Walter E., M.D., Springfield, a graduate of Barnes Medical College, 1906; member of the Greene County Medical Society; aged 75; died November 26.

Lillard, Archie H. M.D., La Belle, a graduate of the Atlanta College of Physicians and Surgeons, 1911; member of the Lewis-Clark-Scotland County Medical Society; age 77; died November 27.

Robinson, Bradbury J., M.D., Farmington, a graduate of Marion-Sims College of Medicine, 1892; honor member of the Mineral Area County Medical Society; aged 86; died Decemer 2.

Peelor, Edwin C., M.D., Clinton, a graduate of Missouri Medical College, 1895; member and former president of the Henry County Medical Society; aged 83; died December 9.

Winn, James W., M.D., Higbee, a graduate of Missouri Medical College, 1895; honor member of the Chariton-Macon-Monroe-Randolph County Medical Society; aged 81; died December 11.

LeFevre, Harry M., M.D., Shelbyville, a graduate of Washington University School of Medicine; member of the Shelby County Medical Society; aged 80; died December 15.

Herrman, Gustav J., M.D., St. Louis, a graduate of Washington University School of Medicine, 1885; retired; honor member of the St. Louis Medical Society; aged 90; died December 18.

Pickard, Mathew W., M.D., Bloomfield Hills, Mich., a graduate of the Kansas City Medical College, 1898; honor member of the Jackson County Medical Society; retired; aged 78; died January 1.

Tracy, James C., M.D., Mound City, a graduate of the University of Louisville School of Medicine, 1887; member of the Holt County Medical Society; aged 85; died January 6.

Krenning, William G., M.D., St. Louis, a graduate of Washington University School of Medicine, 1901; honor member of St. Louis Medical Society; aged 77; died January 8.

Alford, Redman L., M.D., Vandalia, a graduate of Marion-Sims College of Medicine, 1896; member of the Audrain County Medical Society; aged 80; died January 15.

Stokes, James Bell, M.D., Excello, a graduate of the National University of Arts and Sciences, 1918; honor member of the Chariton-Macon-Monroe-Randolph County Medical Society; aged 65; died January 17.

Barton, Harry R., M.D., St. Louis, a graduate of the Jefferson Medical College of Philadelphia, 1892; honor member of the St. Louis Medical Society; retired; aged 83; died January 17.

Carmichael, Francis A., Sr., M.D., Kansas City, a graduate of Northwestern University School of Medicine, 1904; honor member of the Jackson County Medical Society; aged 81; died January 21.

Billeter, William J., M.D., Bynumville, a graduate of the College of Physicians and Surgeons, Keokuk, Iowa, 1887; honor member of the Chariton-Macon-Monroe-Randolph County Medical Society; aged 87; died January 26.

Thompson, Frederick G., M.D., St. Joseph, a graduate of the Medical Faculty of Trinity University, Toronto, Canada, 1888; honor member of the Buchanan County Medical Society; aged 87; died February 5.

Berry, John W., M.D., Cape Girardeau, a graduate of Barnes Medical College, 1896; honor member of the Cape Girardeau County Medical Society; aged 81; died February 9.

Nawrocki, Joseph F. J., M.D., St. Louis, a graduate of St. Louis University School of Medicine, 1906; member of the St. Louis Medical Society; aged 70; died February 12.

Brown, Clyde O., M.D., St. Louis, a graduate of the National University of Arts and Sciences Medical Department, St. Louis, 1915; member of the St. Louis Medical Society; aged 63; died February 12.

Galbreath, Jesse W., M.D., Urich, a graduate of the College of Physicians and Surgeons, Keokuk, Iowa, 1892; member of the Henry County Medical Society; aged 85; died February 13.

Meredith, Guy I., M.D., Joplin, a graduate of the Jefferson Medical College of Philadelphia, 1923; member of the Jasper County Medical Society; aged 57; died February 18.

Chopin, George F., M.D., St. Louis, a graduate of Missouri Medical College, St. Louis, 1896; honor member of the St. Louis Medical Society; aged 78; died February 27.

HILL-BURTON HOSPITAL CONSTRUCTION IN MISSOURI

The status of Hill-Burton hospital construction in Missouri was reported by the Division of Hospital Facilities, FSA, on January 31, 1952, as follows: completed and in operation, eight projects at a total cost of $6,866,483.00 including federal contribution of $2,203,848 and supply 447 addi-

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tional beds; under construction, ten projects at a total cost of $15,939,301.00 including federal contribution of $7,842,179.00 and designed to supply 795 additional beds; approved but not yet under construction, one project at a total cost of $360,000.00 including $180,000.00 federal contribution and designed to supply fifty-nine additional beds.

ASSEMBLY LECTURE AT UNIVERSITY OF MISSOURI

The School of Medicine and the School of Veterinary Medicine of the University of Missouri will sponsor an Assembly Lecture at 8:00 p. m. on April 9 in the General Library Auditorium. All Doctors of Medicine and of Veterinary Medicine and others interested in public health are invited to attend the program.

Thomas G. Hull, M.D., Director of the Scientific Exhibit, American Medical Association, Assistant Professor of Preventive Medicine, University of Illinois College of Medicine, Executive Director of Medical Exhibits of the Museum of Science and Industry, Chicago, will speak on "Contributions of Animals to Man."

Carl F. Schlotthauer, D.V., Associate in the Division of Experimental Surgery and Pathology, Institute of Experimental Medicine, and Professor of Experimental Medicine in the Mayo Foundation, Rochester, Minn., will speak on "Common Diseases Involving Animals and Man."

ST. JOSEPH CLINICAL SOCIETY TO MEET

The Spring Scientific Session of the St. Joseph Clinical Society will be held at the Robidoux Hotel, St. Joseph, Thursday, April 24. The session will begin with a noon luncheon followed by a full afternoon and evening scientific program. All members of the First Councilor District of the Association are especially invited to attend.

FLUORIDATION OF WATER

The Division of Health has announced that it will consider the approval of fluoridation of any public water supply in Missouri subject to the following conditions:

1. That results of a recent dental survey be provided, determining the dental caries problem in the age group 6 through 14 years, and that an acceptable program for a continuing dental survey or subsequent periodic surveys, be established to provide a continuous evaluation of the benefits of fluoridation.

2. That public water supply to which application of fluoride is proposed be a supply approved by the Division of Health.

3. That competent local water works personnel, capable of satisfactory fluorine application and laboratory control, be provided.

4. That detailed plans and specifications for the proposed fluoridation application and control equipment be submitted to the Division of Health by water works officials for examination and approval, and that approval for such facilities be secured in writing before purchases are made.

5. That the application and control of the fluorine treatment be a responsibility of the local water department in cooperation with the local health department and the Division of Health.

MISSOURI ACADEMY OF GENERAL PRACTICE HOLDS FOURTH ASSEMBLY

The Missouri Academy of General Practice will hold its Fourth Annual Assembly at the Governor Hotel, Jefferson City, May 7 and 8, 1952. The following scientific program will be presented:

"A Clinical Approach to Some Common Problems of Fluid and Electrolyte Imbalances," Carl A. Moyer, M.D., St. Louis.

"The Management of Prolonged Labor," William B. See, M.D., Columbia.

"A Résumé of Common Skin Diseases," G. V. Stryker, M.D., St. Louis.

"Extrinsic and Intrinsic Factors in the Diagnosis and Treatment of Allergy," S. F. Hampton, M.D., St. Louis.

"The Neurologic Examination," William P. Williamson, M.D., Kansas City.

DEDUCTIONS ON INCOME TAX FOR ENTERTAINMENT

Many inquiries have been received from members relative to a report of the Judicial Council of the American Medical Association. The report deals with the right of physicians to deduct expenses incurred for entertainment purposes from federal income tax returns. The report of the Judicial Council of the American Medical Association as presented to the House of Delegates at the December 1951 meeting was published in the *Journal of the American Medical Association,* December 22, 1951. On January 14, 1952, the report of the Judicial Council as adopted by the House of Delegates was forwarded to the U. S. Commissioner of Internal Revenue, Washington, D. C. *The Journal,* February 9, 1952, in the Organization Section, carried "The Physician's Federal Income Tax" which explained the requirements of the federal income tax law and outlined the various "deductions for professional expenses" including "entertainment expenses." All of these are being reprinted for the information of members.

"REPORT OF THE JUDICIAL COUNCIL

"Dr. Edward R. Cunniffe, Chairman, presented the following report of the Judicial Council, which was referred by the Speaker to the Reference Committee on Miscellaneous Business: . . .

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"ENTERTAINMENT EXPENSES

"The Judicial Council has been asked to express its opinion with respect to the ethical aspects of expenditures made by physicians for the entertainment of other physicians. The Council does not consider such expenditures as *per se* unethical. There are circumstances under which a professional obligation may rest on a physician to entertain other physicians. It is a usual and necessary concomitant of the practice of medicine. It is certainly not an uncommon practice and is recognized by the profession generally as entirely proper and justifiable.

"The opinion of the Council was requested on this matter because governmental tax authorities in several jurisdictions have questioned the right of physicians to deduct entertainment expenses for income tax purposes, contending that such expenditures are unethical. The Council is informed that the deductibility of similar expenditures has been permitted where the taxpayer is a lawyer. The Council knows of no reason why a different ruling should apply when the taxpayer is a physician.

"The Council expresses no opinion with respect to the legal aspects of the question but does wish to recall to the attention of the House of Delegates a statement that was published in *The Journal* for February 3, 1951, beginning on page 323, which was prepared by the Bureau of Legal Medicine and Legislation and dealt with the physician's federal income tax. In that statement appears references to instances in which the deductibility of expences incurred for entertainment purposes has been permitted when such expenses were incurred by an actor and by a lawyer. The Bureau of Legal Medicine and Legislation is receiving an increasing number of inquiries from physicians whose deductions of entertainment expenses have been questioned. This clarifying statement by the Council may be of much help to these physicians."

The Reference Committee on Miscellaneous Business reported favorably on the report of the Judicial Council and the report was adopted by the House of Delegates.

LETTER OF TRANSMITTAL

Mr. J. W. Holloway, Jr., Director of the Bureau of Legal Medicine and Legislation of the American Medical Association, transmitted this report with the following letter:

"U. S. Commissioner of Internal Revenue,

"Washington, D. C.

"Dear Sir:

"From time to time we have received inquiries from physicians indicating that collectors of internal revenue have questioned the right of physicians to deduct expenses incurred for entertainment purposes in connection with their federal income taxes. It has been suggested that the action of the collectors has been based on the belief that it is unethical for a physician to make expenditures for such purposes.

"At the Los Angeles, 1951, meeting of the American Medical Association our Judicial Council took cognizance of this situation and submitted a report to the House of Delegates which was approved. The report in effect stated that it was not unethical *per se* for physicians to incur expenses for entertainment purposes. It occurs to me that you might wish to have in your office this report and I am enclosing a copy of it."

The following appeared in *The Journal*, February 9, 1952.

"THE PHYSICIAN'S FEDERAL INCOME TAX

"DEDUCTIONS FOR PROFESSIONAL EXPENSES

"Entertainment Expenses.—The deductibility of entertainment expenses, when incurred for business purposes, has been upheld, as applied to an actor, in the case of *Blakmer v. Commissioner*, 70 F. (2d) 255. In the case of *Jacobson*, 6 T. C. 1048, the taxpayer was allowed a deduction of expenses incurred for entertaining clients and employees of his law firm. The deductibility of such expenses by an attorney came before the U. S. Tax Court in the case of *Clyde A. Armstrong v. Commissioner*, decided Aug. 29, 1947, 6 TCM 997. In a memorandum opinion rendered by Judge Opper, this was said.

" 'Taxpayer, a Pittsburgh attorney, became a member of the University Club and the Duquesne Club in order to have available facilities for the entertainment of his clients; his purpose in joining the clubs was not particularly to make contacts productive of new business. In 1942, 1943 and 1944 the Commissioner disallowed deductions representing club dues, but allowed 50 per cent of the house bills incurred by taxpayer at each of the clubs during those years. The court finds that taxpayer used the club facilities not less than 50 per cent of the time for entertaining clients and other purposes incident to the practice of his profession, and allows the deduction of dues to that extent.'

"In the December 1948 issue of the *Medical Annals of the District of Columbia*, page 697, there was published correspondence that had passed between the secretary of the Medical Society of the District of Columbia and the Internal Revenue Agent in the Baltimore Division, Treasury Department, in which the latter stated that if entertainment expenses incurred by a physician have a direct relation to the production of income, and can be supported by the taxpayer, they will be taken into consideration in determining his net taxable income.

"Collectors of Internal Revenue in several jurisdictions have questioned the right of physicians to deduct entertainment expenses, contending that it is unethical for a physician to make expenditures of this character. The Judicial Council of the Association, in its report to the House of Delegates at the Los Angeles, 1951, meeting said in part:

" 'The Council does not consider such expendi-

tures as *per se* unethical. There are circumstances under which a professional obligation may rest on a physician to entertain other physicians. It is a usual and necessary concomitant of the practice of medicine. It is certainly not an uncommon practice and is recognized by the profession generally as entirely proper and justifiable.' "

COUNCILOR DISTRICT NEWS

FIRST COUNCILOR DISTRICT

DONALD M. DOWELL, CHILLICOTHE, COUNCILOR

Grand River Medical Society

Richard H. Kiene, M.D., Kansas City, gave the scientific program at the February 14 dinner meeting of the Grand River Medical Society at the Strand Hotel, Chillicothe. He discussed "Some Common Pitfalls in Orthopedic Surgery." An interesting question and answer period followed his formal presentation.

Two new members were voted into membership in the Society, namely, J. H. Sweiger, M.D., Maysville, and R. E. Haskell, M.D., Norborne.

The newly formed Woman's Auxiliary of the Society held a separate meeting at the Hotel running concurrently with the physicians' session.

E. A. DUFFY, M.D., Secretary.

SECOND COUNCILOR DISTRICT

W. F. FRANCKA, HANNIBAL, COUNCILOR

Chariton-Macon-Monroe-Randolph County Medical Society

The Chariton-Macon-Monroe-Randolph County Medical Society held its regular January meeting in Moberly, Thursday night, January 10.

An interesting program was presented by Mr. McCarthy Hanger of the J. E. Hanger Company of Missouri, who demonstrated various types of prostheses including a new suction type. Several amputees were present at the meeting and demonstrated their artificial limbs.

C. C. COHRS, M.D., Secretary.

THIRD COUNCILOR DISTRICT

ARMAND D. FRIES, ST. LOUIS, COUNCILOR

Eugene M. Bricker, M.D., St. Louis, became president of the Society of University Surgeons at a recent meeting of the society.

John A. Virant, M.D., will speak on "Ear, Nose and Throat Problems of Interest to the General Practitioner" at a meeting of the General Practitioners Study Club of Greater St. Louis on April 16.

FOURTH COUNCILOR DISTRICT

JOHN O'CONNELL, OVERLAND, COUNCILOR

St. Louis County Medical Society

The St. Louis County Medical Society met at the Health Center, St. Louis County Hospital, on Feb-

Advertisement



From where I sit *by* Joe Marsh

They Do "Give A Hoot" For Easy

Easy Roberts finally got rid of the noisy pigeons that used to whoop it up under his eaves.

He must have tried a dozen ways to scare them off. But no matter what he did, they would be right back cooing by his window the next morning.

Then Easy thought of an old stuffed owl he had in his attic. He propped it on the roof so's all the pigeons could see it. They left . . . and three hoot owls have taken their place. Easy swears the hooting is even worse than the cooing of the pigeons.

From where I sit, bright ideas often turn out to be "not so bright." That's why we shouldn't be too positive about our own opinions. Some people like to tell their neighbors who to vote for, how to practice their profession, even what beverage to choose. I believe a glass of beer is the best thirst-quencher—you may believe differently. But who's to say one's right and the other is wrong? Let's just practice tolerance. It'll save a lot of hootin' and hollerin'.

Joe Marsh

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ruary 13, with thirty-eight members and thirteen applicants for membership present.

Following a business meeting concerning constitution and by-laws, K. B. Coldwater, M.D., St. Louis, spoke on "Experiences With Pancreatic Cysts and Chronic Pancreatitis."

Meeting of February 27

The St. Louis County Medical Society met at the Health Center, St. Louis County Hospital, on February 27, with forty-nine members and eleven applicants for membership present.

Carl V. Moore, M.D., St. Louis, spoke on "Recent Advances in Hematology."

M. A. Diehr, M.D., Secretary.

FIFTH COUNCILOR DISTRICT

J. F. JOLLEY, MEXICO, COUNCILOR

SIXTH COUNCILOR DISTRICT

R. W. KENNEDY, MARSHALL, COUNCILOR

SEVENTH COUNCILOR DISTRICT

VICTOR B. BUHLER, KANSAS CITY, COUNCILOR

EIGHTH COUNCILOR DISTRICT

W. S. SEWELL, SPRINGFIELD, COUNCILOR

Stanley S. Peterson, M.D., Springfield, was awarded the Missouri State Junior Chamber of Commerce Distinguished Service Award at a meeting of the organization in Kansas City on February 2.

Ninety-three physicians attended an evening dinner meeting of the Eighth Councilor District at the Kentwood Arms Hotel, Springfield, on February 6. The festivities were initiated by an enjoyable social hour which was followed by a bountiful dinner.

The first speaker on the evening program was introduced by H. W. Carle, M.D., St. Joseph, president of the Missouri Heart Association. The speaker, William D. Paul, M.D., Professor of Internal Medicine, University of Iowa, Iowa City, discussed "Current Concepts in the Treatment of Heart Failure." Dr. Paul was sponsored by the Missouri Heart Association.

The second speaker, Joseph A. Hardy, M.D., St. Louis, was introduced by a former student of Dr. Hardy's, John Ferguson, M.D., Springfield. Dr. Hardy spoke on "Diagnosis and Treatment of Functional Uterine Bleeding."

The final presentation of the evening was given by C. Edgar Virden, M.D., Kansas City, President of the Association. Dr. Virden discussed the official position of the Association as to a four year medical school for Missouri and the actions taken by the Association in this respect.

W. S. Sewell, M.D., Councilor.

NINTH COUNCILOR DISTRICT

E. C. BOHRER, WEST PLAINS, COUNCILOR

South Central Counties Medical Society

The South Central Counties Medical Society met at the City View Cafe, Mountain Grove, for dinner on February 20 with the following members and visitors present: Drs. J. R. Mott, Hartville; R. W. Denney, H. G. Frame, S. W. Connor and A. C. Ames, Mountain Grove; T. J. Burns and S. G. Kramer, Houston; Leslie Randall, Licking; T. R. Skaggs, Mountain View; E. C. Bohrer and Rollin H. Smith, West Plains; C. W. Cooper, Thayer; D. B. Flavin and Charles J. Kromer, St. Louis, and several of the wives.

After dinner the ladies went to the home of Mrs. Denney and the doctors went to Dr. Connor's office and Dr. Connor, the president called the meeting to order.

Drs. Flavin and Kromer conducted a clinic on heart disease in which several patients were examined and informally discussed.

The reading of the minutes was dispensed with.

The following resolution was passed: Resolved, That the Connor Memorial Hospital, Mountain Grove, and the Mountain View Memorial Hospital, Mountain View, be approved and recommended for affiliation with the Blue Cross.

The meeting adjourned to meet in Cabool on March 19.

A. C. Ames, M.D., Secretary.

TENTH COUNCILOR DISTRICT

FRANK W. HALL, CAPE GIRARDEAU, COUNCILOR

E. F. Hoctor, M.D., Farmington, spoke at the annual Health Day meeting of the Woman's Auxiliary to the St. Louis County Medical Society on January 28. He spoke on "Understanding Ourselves and Others."

S. B. Beecher, M.D., Caruthersville, spoke before the Kiwanis Club of Clarkton on February 7 and discussed "County Health Unit Aims and Plans."

BOOK REVIEW

Pioneer Doctor, by Lewis J. Moorman, M.D., University of Oklahoma Press, Norman. 1951. Price $3.75.

Dr. Lewis J. Moorman tells a lively and fascinating story in "Pioneer Doctor." He tells of his old Kentucky home, his experience as a student at Louisville Medical College, his first practice as a country doctor in Tennessee and then his migration to Oklahoma. He participated in the drawing of the last free land in the Indian Territory, but without success.

Here is a story of a horse and buggy country practice evolving into the practice of a large city during rapidly changing times while simple medicine was developing into a science and art of great complexity. One reads here of adventures in internal medicine with special emphasis on tuberculosis. A chapter entitled "A Bug Full of Tricks" is a most readable history of tuberculosis, and the next, "The Little Devil's Dues," is an account of the influence of tuberculosis on the lives of great men. The story covers experiences in medical education as Dr. Moorman was Dean of the University of Oklahoma School of Medicine.

Many surprising things were encountered in the Oklahoma country. He tells of poverty and ignorance, of generosity and bravery of the pioneer settlers, of quacks and other imposters, of the curious baffling psychology of the Indians, of storms and floods. He has a lot to say about his horses, in fact there is one whole chapter on "My Horses."

This is much more than just a story of a pioneer doctor. H. A. B.

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TYPICAL PATCH TEST

Over 400 infants and children from 2 weeks to 6 years of age acted as test subjects to check the incidence of sensitivity to orange juice. After 2 to 12 months' observation,* "no disturbance of bowel function (diarrhea or constipation) that could be attributed to the orange juice" was found. Also, the occurrence of regurgitation and rashes was "minimal". In the rare instances of sensitivity, care exercised by gentle reaming of juice (or the use of frozen concentrate) to avoid contamination with peel oil usually obviates the difficulty.

**J. Pediat. 39:325, 1951*

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BOOK REVIEWS

PSYCHOSOMATIC GYNECOLOGY—By William S. Kroger, M.D., Assistant Clinical Professor of Obstetrics and Gynecology, Chicago Medical School; Attending Obstetrician and Gynecologist, Edgewater Hospital, Chicago, and S. Charles Freed, M.D., adjunct in Medicine, Mount Zion Hospital, San Francisco, California. Publishers, W. B. Saunders Co., Philadelphia, Pa. 1951. Price $8.00.

This book follows the usual type of reasoning of the psychosomatic school. Neurotic and physical ills are reduced to a sort of clear level with the inference that all are or may be ultimately the result of various mental complexes. The logic followed is so different from that ordinarily used by investigators that it is difficult for one outside the school to comprehend.

Perhaps an idea of this can be given by a few quotations: "In contrast at the present time there appears to be little need to plead for the acceptance of the fundamental principles of psychoanalysis" (p. 1); "Certain experiences of the birth process may determine how and to what degree emotions may be expressed later in life" (p. 15); "There is sufficient evidence that emotional factors contribute to the 'abortion habit . . .'" (p. 151); "The fragmentary evidence inadmittedly inadequate to construct the psychosomatic basis of pregnancy toxemia. Nevertheless . . ." (p. 169); "There is some evidence that hypotonicity of the pelvic musculature may be related to various psychologic factors" (in the causation of prolapse) (p. 413); "In one case a fibroma disappeared following psychotherapy; in another an ovarian cyst disappeared" (p. 427).

It is of course desirable that the influence of the mental on the physical be investigated but the methods of this book will scarcely contribute to the result. Those interested should read an editorial on the subject in the November 10, 1951, number of the *British Medical Journal*. L. B. A.

MERCK MANUAL OF DIAGNOSIS AND THERAPY, THE, A source of ready reference for the physician. Eighth edition. Merck and Company, Inc., Rahway, N. J., U.S.A., Export Subsidiary: Merck (North America) Inc., In Canada: Merck and Company, Limited, Montreal. 1950. Price $4.50; Thumb-index, $5.00.

Now in an 8th edition and still pocket-size, "Merck's Manual" condenses an amazing amount of medical information in usable form with a good index for quick reference.

Part I comprises 1,460 pages of medicine starting with a section on veneral diseases. A notable feature is the list of useful prescriptions at the end of each section. (And not limited to Merck products.)

Part II comprises summarized information, "Routine Immunization Procedures," "Clinical Procedures," "Bedside Procedures," "Preoperative and Postoperative Procedures," and such. An especially useful listing is the "Alternative Proprietary Procedures."

Part III is the index.

While not a substitute for the standard medical textbooks, "Merck's Manual" will probably be of more help to the average practicing physician, and it is certainly worth its cost. B. S. P.



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Therapy for Vascular Headache to Reverse the Physiologic Disturbance

Headache, a problem encountered in all kinds of medical practice, may occur in association with any of a variety of disorders, some organic, other purely functional.

Among the several types, functional headaches present the greatest problem because of their obscure etiology and recurrent nature.

Among these are:

Migraine (both classical and variant forms)
Tension headache
Psychogenic headache
Histaminic cephalgia

Wolff and his co-workers established that the pain of these headches is due to disturbance of the tonus of cranial blood vessels — hence the term *vascular headaches.*

The craniovascular changes associated with the several phases of the typical migraine attack are:

Vasoconstriction — to which the visual prodromata are attributable. It is possible to abort the attack during this phase in all but a few cases. (See treatment below.)

Vasodilatation — as the vessels lose their tone, exaggerated pulsations set in, resulting in the throbbing pain which characterizes vascular headache. Treatment for the attack is still effective during this phase. (See below.)

Vessel Edema — if the vasodilation continues for too long, vessel walls become edematous; this changes the character of the pain to a steady, intense aching. The attack can now no longer be checked, even with maximum dosage of specific drugs. *Moreover, sustained headache often induces reflex neck muscle tension, a source of residual pain.*

Therapy: **1.** Reduce the frequency of attacks — psychotherapy and regulation of living habits to avoid fatigue and nervous tension.

2. Relieve the acute attack — of the numerous drugs which have been tried, ergotamine and its derivative preparations have proved most effective. The newest product is oral tablets of Cafergot®, N. N. R. (ergotamine with caffeine 'Sandoz'). When dosage is adjusted to the needs of the individual, Cafergot will give good relief in 85% of cases. It enables a greater number of patients to benefit from early administration since the oral route simplifies treatment as compared to parenteral therapy.

The dosage procedure is:

1. Take 2 tablets at first sign of the attack.
2. If attack continues, take one additional tablet every ½ hour until attack is terminated *(max. 6 tabs. per attack).*

Many migraine patients delay taking medication until the attack is at its height. Explicit dosage instructions may be forgotten unless the patient comes to realize their importance. Therefore, to encourage adherence to correct procedure, we have prepared pads outlining detailed dosage instructions. Supplies of these INSTRUCTION SLIPS will gladly be sent upon request.

GENERAL REFERENCES: DeJong, R.: Chicago M. Soc. Bull *54:* 106, 1951. Friedman, A.: Modern Headache Therapy, St. Louis, C. V. Mosby Co., 1951. Wolff, H.: Headache and Other Head Pain, N. Y., Oxford Univ. Press, 1948.

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Curbstone Consultation

In 1945, of the staphylococcic infections seen in hospitalized patients, 14 per cent proved resistant to penicillin; by 1950, these penicillin-resistant cases of staphylococcic infections had risen to 50 per cent.

This increase is undoubtedly related to the widespread and often indiscriminate use of penicillin in prior instances of minor infections in such patients.

Barber et al, Lancet *2*: 1948, p. 641. Rountree et al, Lancet *2*: 1948, p. 801.

Pathologically Speaking

BACTERIAL SENSITIVITY TESTS

IN ORDER to choose *the best antibiotic* in treating a given infection, material from the infected area should be obtained for smear and culture *before* any antibiotic therapy is begun. Since Gram stained smears of the infected material often will reveal the predominating organism, therapy can then be immediately instituted on the basis of which antibiotics are *usually* most effective against the infecting organism.

Meanwhile, the culture allows for isolation of the specific organism or organisms, and plates of the pure cultures can then be treated with the standard six antibiotics which are now prepared as "sensitivity discs"; these include terramycin, aureomycin, chloromycetin, penicillin, streptomycin, and bacitracin. By reporting the size of the zones of inhibition of bacterial growth about each disc, the laboratory can then advise the physician which antibiotics are most effective against the particular organism involved and, if a drug other than the ones already used is more effective, the change in therapy can be made with the least possible loss of time to the patient. Should the organism prove insensitive to all of the above six drugs, further studies are done with one of the sulfonamides and with acrosporin.

It should be emphasized that, if the original material for culture is obtained *before* various drugs have been used, growth characteristics of the organism will not have been interferred with, and both bacterial growth and sensitivity studies to antibiotics will be more typical, clear-cut and direct—factors of great value to both physician and patient.

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Gallbladder Surgery, Ten Hours, starting April 21.
Basic Principles in General Surgery, Two Weeks, starting September 8.
General Surgery, One Week, starting May 12.
Breast & Thyroid Surgery, One Week, starting June 23.
Esophageal Surgery, One Week, starting June 23.
Thoracic Surgery, One Week, starting June 2.
Fractures & Traumatic Surgery, Two Weeks, starting June 16.
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Vaginal Approach to Pelvic Surgery, One Week, starting May 5, June 9.
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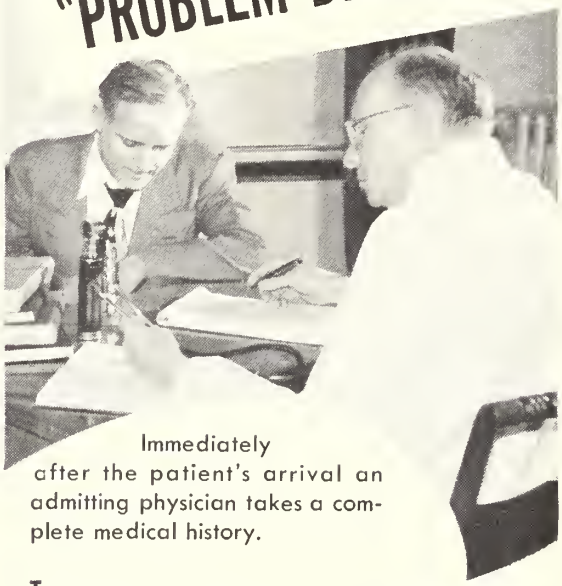
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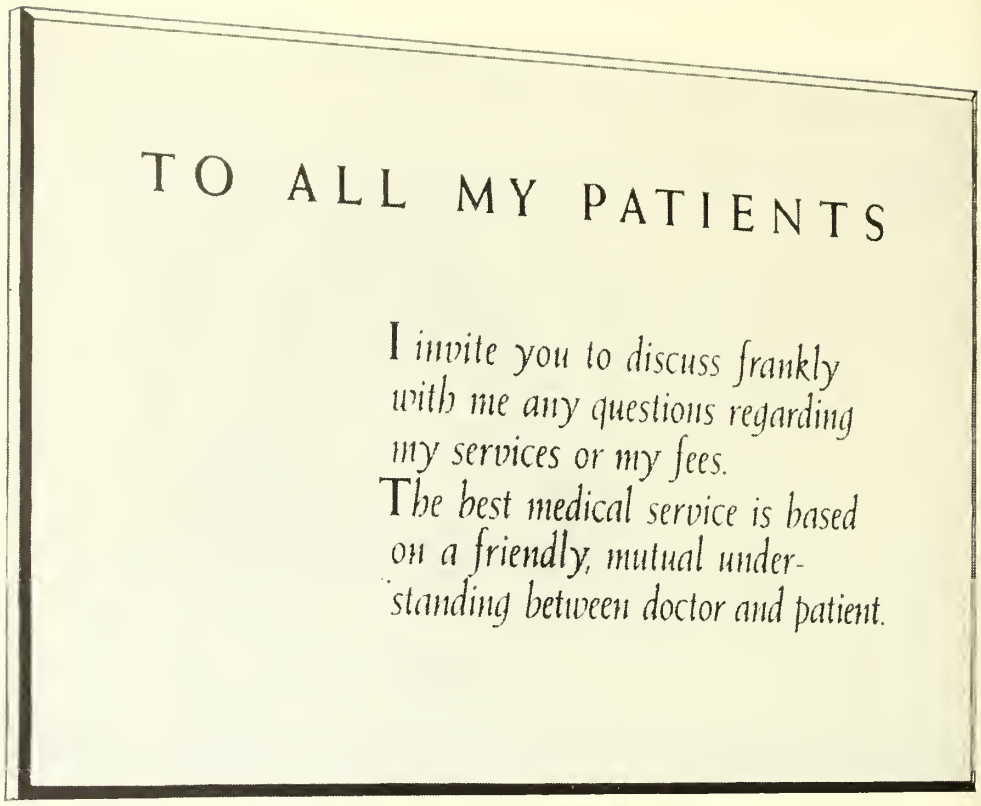
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Subscription: $3.00 per year; 40 cents per copy.

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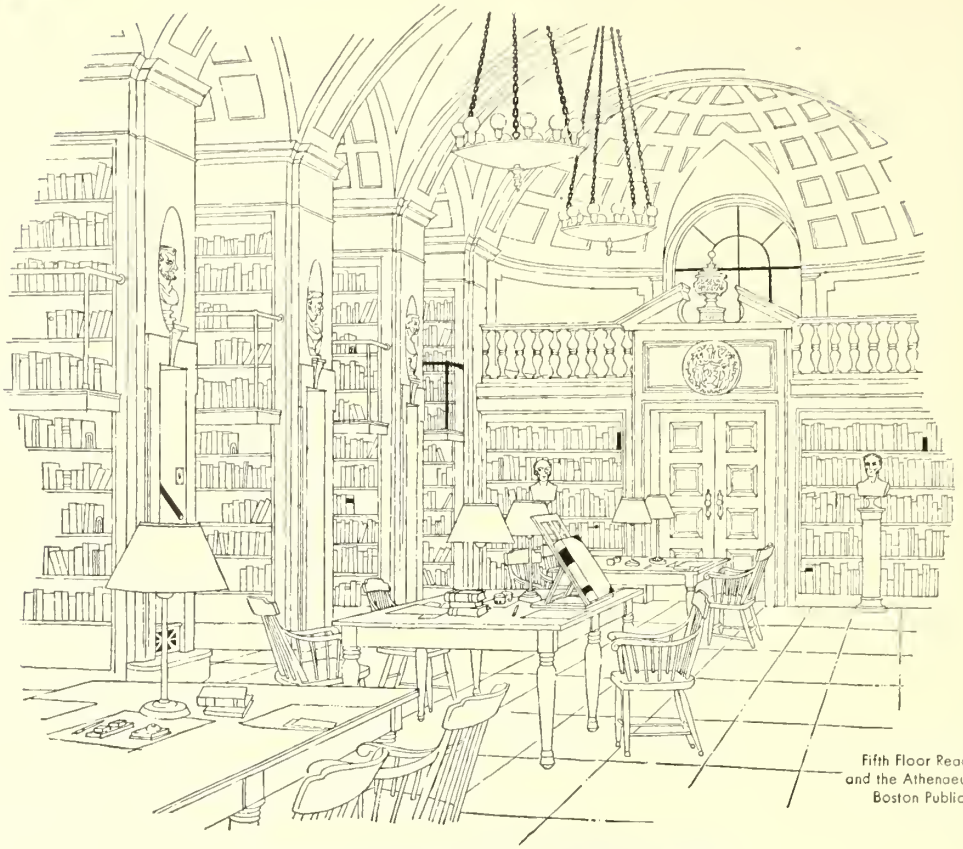
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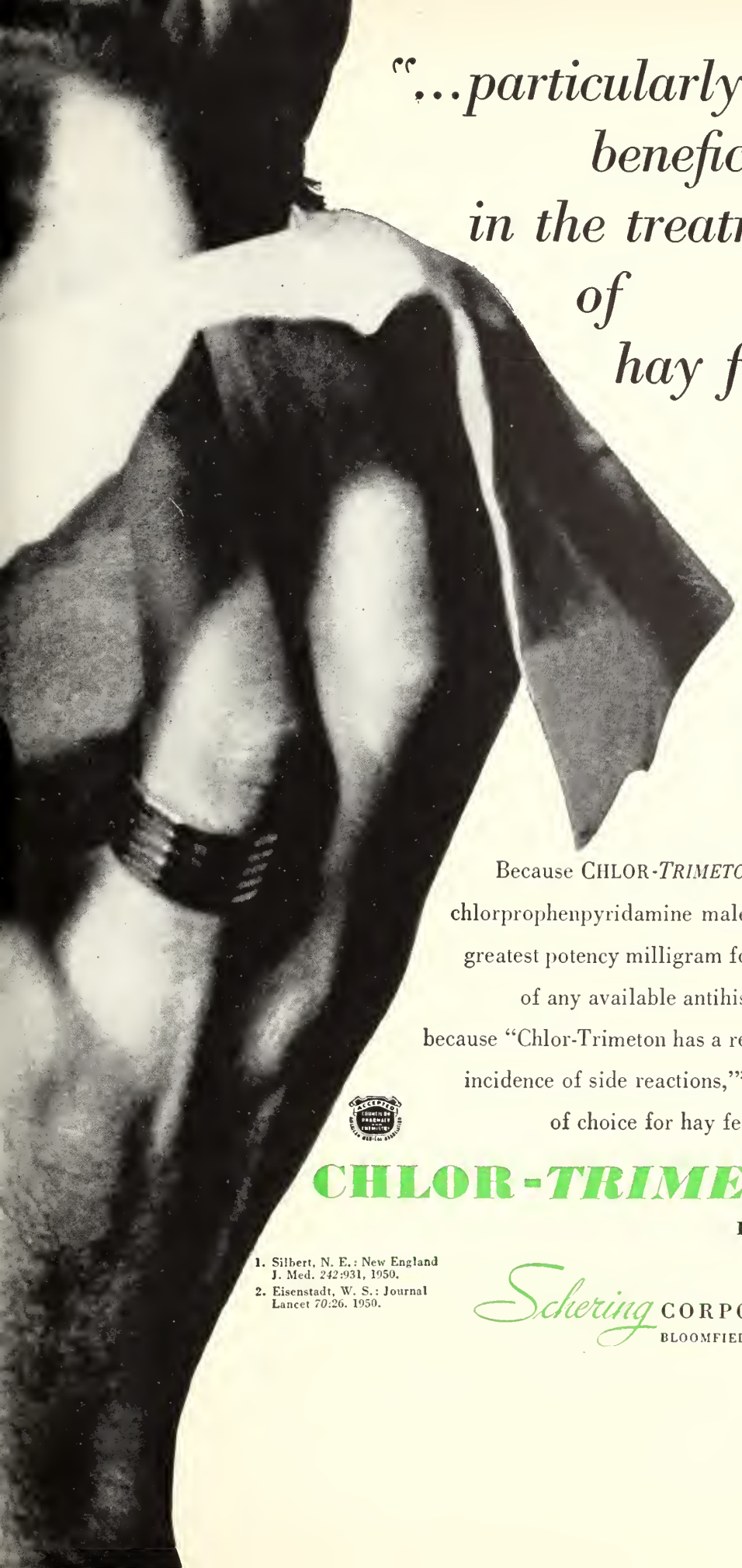
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Lincoln	4	H. S. Harris	Troy	J. C. Creech	Troy
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Moniteau	5	J. P. Burke, Jr.	California	R. B. Fulks	California
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Nodaway-Atchison-Gentry-Worth	1	E. D. Imes	Maryville	Charles D. Humberd	Barnard
North Central Counties Medical Society (Adair-Schuyler-Knox-Sullivan-Putnam)	2	Val E. Miltenberger	Kirksville	John B. Jones	Kirksville
Ozarks Medical Society (Barry-Lawrence-Stone-Christian-Taney)	8	A. J. C. McCallum	Aurora	R. R. Donley	Monet
Pemiscot	10	C. F. Cain	Caruthersville	C. C. Castles	Caruthersville
Perry	10	O. A. Carron	Perryville	J. F. Lutkewitte	St. Marys
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Phelps-Crawford-Dent-Pulaski	9	Guy V. Everist	Rolla	M. K. Underwood	Rolla
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St. Louis City	3	Jerome I. Simon	St. Louis	J. E. VonKaenel	St. Louis
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Semo County Medical Society (Stoddard, New Madrid, Mississippi, Scott)	10	W. J. Ferguson	Sikeston	Wm. C. Critchlow	Sikeston
Shelby	2	Perry C. Archer	Shelbyville	T. J. Hoerchler	Shelbina
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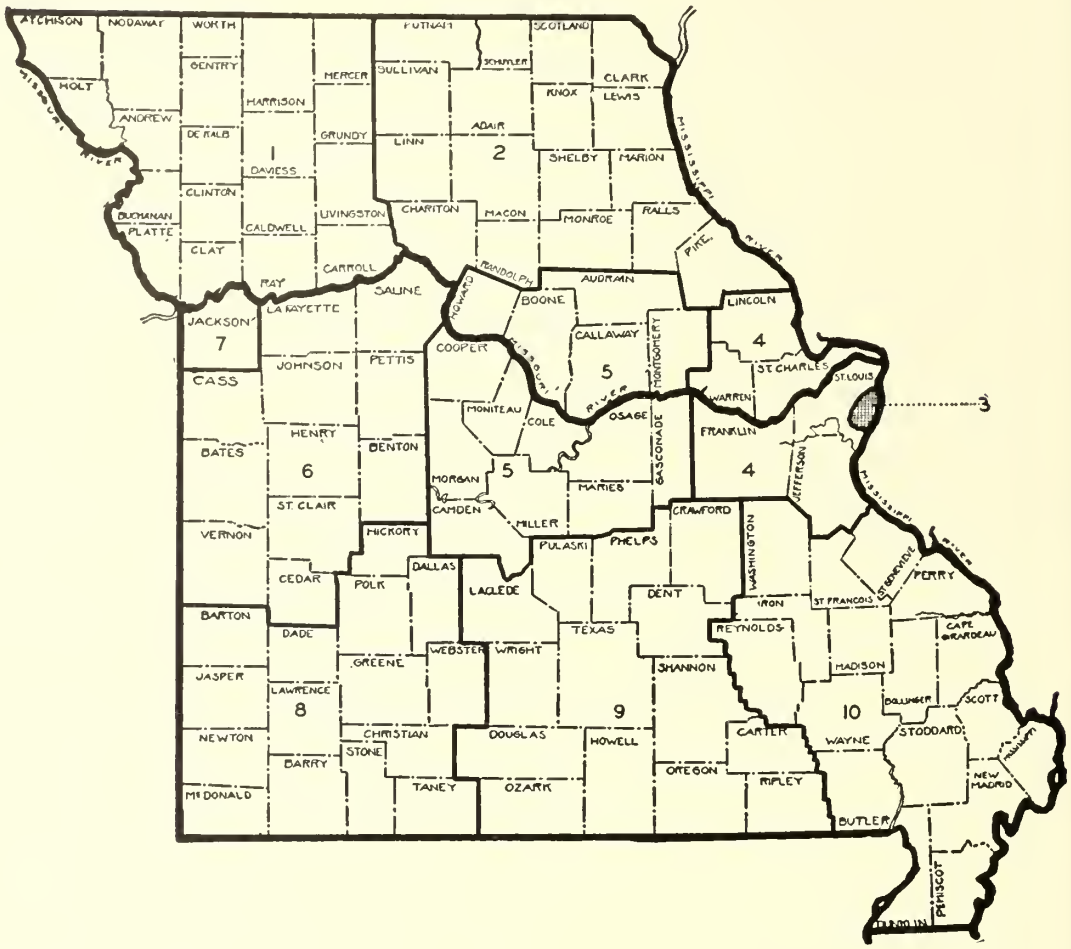
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2. Eisenstadt, W. S.: Journal Lancet 70:26. 1950.

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*Matthews, J. G.: Care and Healing of Traumatic Wounds. *Northwest Med.*, 50:512, July, 1951

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Sprague, R. G.: Cortisone and ACTH, Am. J. Med. *10*:567, 1951.

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Kaplan, H. S. and Rigler, L. R., Journal of Laboratory and Clinical Medicine, Vol. 32, No. 6, June, '47, p. 644 ff.

Pathologically Speaking

STERNAL PUNCTURE

IN THE current scientific literature, one notes more and more indications for the examination of the bone marrow. The simplicity and relative lack of danger of the procedure of bone marrow aspiration makes it an excellent diagnostic tool.

Formerly utilized only in cases of suspected leucemia or aplastic anemia, sternal puncture is now also of proven value as a diagnostic aid in suspected cases of myeloma, lupus erythematosus, metastasis of malignant neoplasms, sarcoidosis, and pernicious anemia. In some of the infectious granulomatous diseases—such as brucellosis, histoplasmosis, tuberculosis, and others—either the specific granulomatous lesion is present in histologic sections of marrow or the organism can be cultured from the aspirated bone marrow. Occasionally, in cases of subacute bacterial endocarditis or malaria, the marrow yields the offending organism when all other diagnostic procedures have failed.

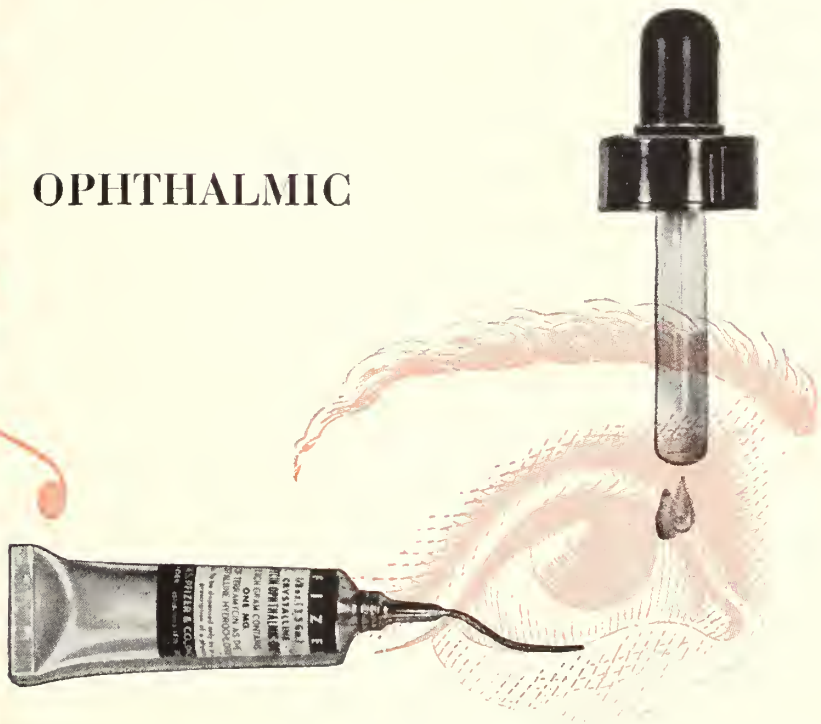
It is practically inexcusable to perform splenectomy for thrombopenia, leucopenia, and/or splenic anemia before bone marrow studies are done to prove the proper generation of these elements.

Performed with sterile technique and the use of intradermal novocaine, the introduction of the short sternal needle into the marrow cavity entails no danger of infection and a minimum of discomfort to the patient. In the relatively rare instance in which a satisfactory marrow specimen cannot be obtained from the sternum, the spinous processes of the vertebrae or the iliac crests offer another site for aspiration. Surgical biopsy also may be performed at any of the above areas.

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Meat and its applicability in the Dietary Management of Atherosclerosis

Contrary to the former belief that serum cholesterol levels are primarily related to ingested animal fat and consequently to dietary cholesterol, it now appears that the total amount of fat in the diet, not its source or cholesterol content, is a more important factor in determining the blood cholesterol concentration.[1,2,3,4] Clinical observation has shown that ingestion of vegetable fat—which contains no cholesterol—will, like fats of animal origin, raise the serum cholesterol level.[3, 5]

Recent basic research on the influence of fats and cholesterol on human health has done much to further progress in the fight against atherosclerosis. It will serve well in dispelling the mistaken fear that reasonable amounts of foods of animal origin predispose the individual to this vascular disease.[6] As a matter of fact, a dietary inadequate in essential nutrients but providing too many calories and too much fat from *any* source may well be an important factor underlying the deposition of fat and cholesterol in the arteries and liver.

Cumulative evidence indicates that lowered blood levels of cholesterol may be effected by restricting the total fat intake.[1] Except in instances of refractory hypercholesteremia, in which a daily fat intake as low as 10 Gm. may not reduce cholesterol levels to normal, diets containing 20 to 30 Gm. of fat, or even more, often produce low cholesterol blood levels. In the clinical application of this principle, various palatable, low fat diets which supply three servings of meat daily (containing 18 Gm. of fat) have recently been suggested for the dietary management of arteriosclerosis and for enlisting the cooperation of patients.[1] The meat servings were chosen from a large variety of cuts and kinds of meat (fat trimmed off, as lean as possible). Meat adds to the eating appeal of the fat-restricted diet and contributes important amounts of biologically complete protein, the B group of vitamins including B_{12}, and food iron—all of which are important for a good state of nutrition in the atherosclerotic patient.

1. Hildreth, E.A.; Hildreth, D.M., and Mellinkoff, S.M.: Principles of a Low Fat Diet, Circulation *4*:899 (Dec.) 1951.
2. Bloch, K.: The Intermediary Metabolism of Cholesterol, Circulation *1*:214 (Feb.) 1950.
3. Keys, A.; Mickelson, O.; Miller, E.V.O., and Chapman, L.B.: The Relation in Man Between Cholesterol Levels in the Diet and in the Blood, Science *112*:79, 1950.
4. Gubner, R., and Ungerleider, H.E.: Arteriosclerosis, a Statement of the Problem, Am. J. Med. *6*:60, 1949.
5. Hildreth, E.A.; Mellinkoff, S.M.; Blair,G.W., and Hildreth, D.M.: The Effect of Vegetable Fat Ingestion on Human Serum Cholesterol Concentration, Circulation *3*:641 (May) 1951.
6. King, C.G.: Trends in the Science of Food and Its Relation to Life and Health, Nutrition Rev. *10*:1 (Jan.) 1952.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

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THE JOURNAL

OF THE

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Volume 49 May, 1952 Number 5

PRESIDENT'S PAGE

The Committee on Emergency Medical Service is to be complimented for the excellent manner in which it has prepared plans in the event of atomic disaster. The official state plan for medical and health services was turned over to the Director of Civil Defense in July 1951. This plan was published in the October 1951 issue of THE JOURNAL.



It is hoped that the series of articles contained in this issue of THE JOURNAL will serve as a guide for physicians in the event of an atomic attack.

Plans are in process for teams of physicians from St. Louis, Washington and Kansas University medical schools to make available short courses of instruction for physicians in recognized treatment methods. It is expected that these courses will be presented to physicians at the local and district medical society level during the fall and winter months of 1952.

In the meantime, please preserve this issue of THE JOURNAL for your own use. It is a practical reference guide for the handling of mass casualties.

J. William Thompson M.D.

Civil Defense

AN EDUCATIONAL PROGRAM FOR SPECIAL MEDICAL DEFENSE

CARROLL P. HUNGATE, M.D.
KANSAS CITY

THIS ISSUE OF THE JOURNAL of the Missouri State Medical Association is a companion to the October, 1951, edition. In October the organization of the Medical Division of the Missouri Civil Defense Agency was presented in THE JOURNAL as a reference source for all physicians in the State of Missouri. That special issue received wide publicity throughout the United States. The authors of the subject matter contained in this issue of THE JOURNAL present standardized methods for the processing and treatment of mass casualties.



C. P. HUNGATE

The three medical schools which service this area, Washington University, St. Louis University and Kansas University have, through their respective deans and with the cooperation of their respective staffs, agreed to assume responsibility for determining what standard treatments for the medical care of mass casualties shall be and to provide the curriculum and personnel necessary to bring this subject matter to the rank and file of the medical profession, not only in the State of Missouri but also to the medical profession in the State of Kansas and in the southern half of the State of Illinois, should the latter desire to take advantage of this opportunity.

Beginning in the fall of 1952, traveling teams from each medical school will present a "Symposium on Trauma" to the medical profession in the indicated states. Those areas in closest proximity to each medical school will be processed by that medical school in order to economize manpower and money. It is anticipated that several medical societies, outside metropolitan areas, will have consolidated meetings in order to again reduce cost and minimize the expenditure of energy by the traveling teachers.

The details of the program will be developed jointly by the medical schools, the State Health Departments (Civil Defense Agencies) and the executive secretaries of the respective state medical associations.

The medical profession, in this area, will not be pioneers in this field of developing standardized methods of treatment and traveling teams to bring the educational program close to the home of the rank and file of the profession. New York State has been the guiding force in many fields of the present Civil Defense and Disaster Program, and so they are in the field of medical education in the medical management of mass casualties. As trauma and its treatment is a pressing concern of the American College of Surgeons, a synchronization of the educational policy of the College and Civil Defense is appropriate at this time. The organization of the College in each state could well be utilized in this overall program.

It is understood by all participating members of the staffs of the respective medical schools that standardization of treatment for certain types of wounds will conflict with the personal opinion of many members of the profession. This is accepted and no argument will ensue. In the handling of mass casualties, that treatment which will be most useful in the care of the greatest number because of simplicity and life saving possibility will be taught. Many casualties in the event of a major catastrophe will be given minimal care by others than physicians; personal, individualized care will not result until life saving emergency care has been rendered to the injured masses.

With the introduction of this educational program and the official appointment of the personnel in the Medical-Health Division of the Missouri State Civil Defense Agency, the Emergency Medical Service Committee of the Missouri State Medical Association has accomplished a long and tedious assignment. The work is not over. In fact, it has only begun. The inspiration, direction and stimulation for development of the organization now becomes the job of the official members of the state organization. The Emergency Medical Service Committee, as such, now becomes an advisory committee and liaison group with the mother committee of the American Medical Association.

In concluding the major phase of the Committee's activity, it seems appropriate to make a recapitulation of its objectives and accomplishments. The primary objectives of the Civil Defense Program, so far as it affected the medical profession, was to alert the public and their representative civil officials to the cause, result and protection against casualty producing catastrophes in this modern era. Because the atomic bomb was something new, something different in its awfulness, special emphasis was placed on the medical aspects of the atomic bomb. The primary objective was education. Members of the medical profession throughout the state gave of their time and energy addressing gatherings of professional and lay people. County, city and state officials were urged to create a Civil Defense Agency and to appoint a director. Thereafter, the

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Opinions stated are those of the author and not the official opinion of the Navy Department.

Capt. (MC), USNR, Senior Medical Officer, U. S. Naval Air Station, Olathe, Kansas.

official agencies were urged to develop their plans and put them into some phase of operation, as money was made available and public interest developed.

If the committee, therefore, looks back it can see that it has come a long way down the road in developing an alertness on the part of the people in this area. In 1949, a few of the medical profession in this state and a lesser number of the lay public knew anything about the atomic bomb except that it destroyed all hope of life or living. For security reasons, perhaps, for propaganda effect, no doubt, little was found in the press or heard over the radio about atomic energy and its peace and war time uses. Today the middle western section of the United States is as cognizant of the atomic age as any comparable area in the country. A large part of this is due to the activity of the medical profession. There are, in Missouri and adjoining states Civil Defense Agencies officially designated and state directors with working staffs. Plans for most every phase of civil defense and disaster are at least down on paper. City and county directors have been appointed and, in many instances, are well organized. Training programs, given under the auspices of the American Red Cross, are under way with scores of citizens in each section of a community volunteering for the classes. Many trial runs have already been carried out to test the adequacy of such things as communication systems, air raid warning systems and evacuation. The medical profession is well able to handle, by training and new knowledge and a mixture of old army evacuation technics, the care of mass casualties even though the organization is far from perfect. The profession is alert to the need for and methods of providing medical care during a major catastrophe.

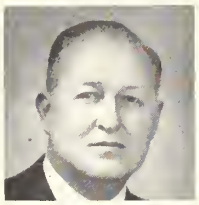
Apathy exists, yes, but a lot has been accomplished during the last three years. Let's be realistic about the progress.

934 Argyle Bldg.

THE EMERGENCY TREATMENT OF CASUALTIES WITH MAJOR OPEN WOUNDS, BLAST AND CRUSH INJURIES

OSCAR P. HAMPTON, JR., M.D.
ST. LOUIS

THE EMERGENCY management of those sustaining major open wounds or crush injuries during a civilian disaster should be considered under (1) first aid measures applied in the disaster area and in aid, collecting or clearing stations. These comprise the treatment rendered a severely injured man before he reaches a hospital and (2) initial wound surgery which includes the preoperative preparation, operative procedure on the wound (wounds) and postoperative transporation splinting. These are provided in emergency (possibly tent or improvised) hospitals adjacent to the disaster area.



O. P. HAMPTON

FIRST AID MEASURES

These are dressing of wounds, control of hemorrhage, control of pain, emergency splinting, tetanus prophylaxis, resuscitative measures and perhaps antibiotic therapy. Just what facilities and equipment can be made available to facilitate the rendering of first aid measures in the disaster area and the stations through which the casualties will be evacuated is not within the province of this paper. The aid measures will be presented under the assumption that facilities and equipment will be made available under a Civil Defense plan somewhat as they are made available in the divisional area of an army in combat.

Dressings.—The importance of the application of a sterile or at least a clean occlusive dressing to a wound is not to be minimized. Once securely applied the dessing prevents further contamination of the wound and minimizes further loss of blood and tissue fluid from it. It contributes materially to the comfort of the patient. A sucking wound of the chest often may be eliminated by an occlusive dressing. At times, wounds of the jaw may be so dressed as to support the mandible and keep open the airway. Evisceration of abdominal contents may be retarded or prevented in large wounds of the abdomen by a dressing.

Once adequate dressings have been applied, they are not to be disturbed or replaced except on special indications until the injured man has been hospitalized. Of course, an insecurely applied dressing which slips so as to partly or completely uncover the wound must be replaced by a fresh dressing. Also, evidence of continuing significant hemorrhage forms an indication for removal of dressings and examination of the wound to determine whether a major vessel may be clamped or whether a tourniquet is indicated.

Control of Hemorrhage.—Hemorrhage will be controlled adequately in the majority of wounds by the use of a compression dressing. A moderate amount of pressure should be applied but obviously the bandage must not be so applied as to constrict circulation to or from the distal portion of an extremity. If hemorrhage is not controlled by a pressure dressing, then the application of a tourniquet is indicated. A properly applied tourniquet will often be a life saving first aid measure but it should not be used indiscriminately as it is a potentially dangerous agent.

It should be kept in mind that the necessity for a tourniquet may not be evident when a first aid team finds the casualty. The blood pressure may have already fallen to a point which has permitted

the hemorrhage to stop. Later, perhaps after resuscitative measures have been instituted, the blood pressure rises and hemorrhage recurs. The recurring hemorrhage will manifest itself by a freshly soaked dressing from which blood is probably dripping. If the conditions are adequate, the dressing may be removed and some effort made to apply a hemostat to the actively bleeding major vessel after which a fresh occlusive dressing is applied to the wound with the clamp remaining in place. If, however, the point of active hemorrhage is not easily located and arrested, a tourniquet should be applied immediately.

Once the indication for a tourniquet has been definitely established and it has been applied, it preferably is not loosened until the blood volume has been restored to a safe level by blood transfusions or, if blood is not available, by plasma or plasma expander transfusions, and facilities for the surgical control of recurring hemorrhage are available. This means that tourniquets should not be released for five minutes every half hour or even every hour as was advocated during the early months of World War II. That practice was both unwise and unnecessary. Perhaps some limbs were lost because tourniquets were in place too long but it is equally true that some lives were lost because removal of the tourniquet permitted the repeated loss of small quantities of blood which to an almost bled out individual were lethal. Once the major artery in the lower extremity has been destroyed, the chances of limb survival are not good. In a large series of major vascular injuries, the incidence of gangrene and amputation in those limbs with severed femoral arteries was 45.2 per cent, with severed superficial femoral arteries 55.9 per cent, and with severed popliteal arteries 69.8 per cent. Since the odds are against survival of the limb with these injuries regardless of the tourniquet, the theoretic advantage of removing it to permit blood to flow to the limb in an effort to avoid gangrene does not justify the added risk to the life of the patient. Moreover, experiences during World War II showed that a tourniquet may remain undisturbed for several hours and yet ischemic gangrene not result. When the weather is extremely cold or the limb can otherwise be kept reasonably cool, it appears that the time can be extended to as much as five or six hours without undue risk.

All of the foregoing, however, does not mean that the tourniquet should be left in place indiscriminately for a long period of time. Casualties with a tourniquet applied to a limb should have a high priority for evacuation to a hospital and there have a high priority for treatment of shock and surgery so that the tourniquet can be removed safely as soon as possible.

Control of Pain.—Morphine, of course, is the best agent for the control of pain. Even so, it should be administered with discretion. The preferable dosage is 1/6 of a grain intramuscularly followed by massage as an aid to absorption. The administration of this amount together with a careful dressing of the wound and adequate splinting of the extremity is usually sufficient to control the pain of a fresh injury. If severe pain persists the dosage may be repeated but this is not without danger particularly in injured men in shock or those who have been long exposed to cold. Shock and exposure to cold result in retardation of the peripheral circulation and absorption of the morphine is inhibited. When the circulation has improved following treatment for shock or warming, there may be simultaneous absorption of several doses of morphine previously administered with resulting morphine poisoning. This is a real danger which should be kept in mind by anyone who is deciding upon a repeated dose of morphine for pain.

Antibiotic Therapy.—A preparation of procaine penicillin of from 300,000 to 400,000 units should be given intramuscularly as soon as is feasible to casualties with major open wounds. Just where in the evacuation chain it will be practicable to initiate this antibiotic therapy is speculative. It probably will be initiated in the clearing station or perhaps in the shock ward of an emergency hospital. Penicillin is the antibiotic of choice for potential or impending infection in open wounds by an unknown although certainly varied bacterial flora because of its availability, ease of administration and relative lack of side reactions.

Prophylaxis Against Tetanus.—While a prophylactic agent against tetanus will be mandatory for casualties with major open wounds, the most practicable station for its administration is as yet undetermined. It seems quite unlikely that it will be feasible to have these prophylactic injections administered by first aid teams in the disaster area or in the stations leading from it. Prophylaxis against tetanus will probably be the responsibility of the hospital receiving the casualty with a major open wound and of a dressing station outside the disaster area which receives and cares for the wounds of lesser magnitude.

Proper prophylaxis against tetanus in event of a civilian disaster calls for active immunization of the entire population with tetanus toxoid so that a stimulating dose of toxoid may be routine for all casualties with open wounds. It is astounding that some high level public health agency has not as yet put on a campaign for active immunization of the populace against this dreaded complication of wounds. Adequate preparation for a potential civilian disaster demands it now. In event of civilian disaster, there should be need for tetanus antitoxin only for the treatment of clinical tetanus and passive immunization of those with injuries necessitating such protection who present no evidence of previous immunization with toxoid.

The effectiveness of active immunization against

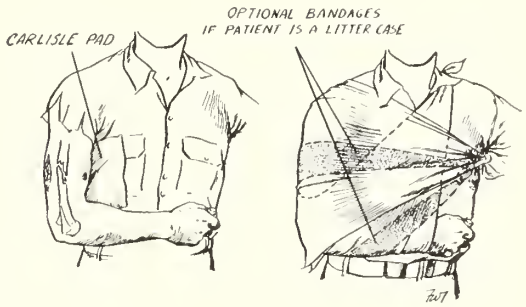
tetanus with toxoid was established by the experience of the United States Army during World War II. Only twelve cases of tetanus were recorded. In six of this group, active immunization had not been established and only one of the other six had been immunized in strict accordance with the Army routine of a basic series of two injections followed one year later by a stimulating dose and with another stimulating dose when a wound was received.

Resuscitative Measures.—Occlusive dressings, morphine in sufficient but definitely not excessive dosage, and adequate emergency splinting are important resuscitative measures. The most important measure, however, in the treatment of shock is restoration of the depleted blood volume. Details of the therapy of shock will be discussed later under preoperative preparation for surgery but it must be kept in mind that some restoration of blood volume may be necessary before hospitalization of the severely injured or wounded to make them transportable to a hospital. For this, whole blood is by far the most effective and most desirable agent but, again, the practicability of making it available in the disaster area or stations of the evacuation chain to a hospital seems doubtful. It is reasonable, however, that the so-called blood substitutes, dried plasma or a plasma expander such as Dextran, will be available at least in the clearing stations. These agents can elevate a dangerously low blood pressure and maintain the increase long enough for transportation to a hospital to be completed. Those in charge of clearing stations, however, must exercise sound judgment in determining whether it is best to hold a casualty in shock in order to give him plasma or a plasma expander or to have him transported at once to an emergency hospital where it is anticipated that whole blood will be available. It is to be emphasized that the intravenous administration of an agent for a depleted blood volume in a clearing station is merely to resuscitate the severely injured individual sufficiently to make him transportable. This is entirely different from the purposes of blood transfusion in hospitals for resuscitation of the casualty sufficient for him to withstand anesthesia and surgery.

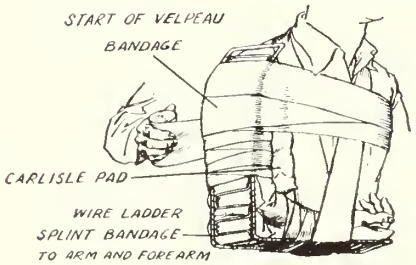
Emergency Splinting.—The emergency splinting of a fractured extremity with or without a major open wound is a highly important part of first aid management. When it is properly carried out, it minimizes or prevents shock and is an important step toward resuscitation of the casualty.

The objective of emergency splinting is, of course, not reduction of a fracture but the prevention of additional damage to soft parts by fragments of bone. When these fragments have been adequately immobilized, the other objectives of emergency splinting, namely, the relief of pain and comfortable transportation, will have been achieved.

First aid emergency splinting undoubtedly will be improvised in most instances. The use of standard traction splints while highly preferable is unlikely to be feasible. Available boards or limbs of trees will furnish the splinting devices, and fortunately these can be made quite effective. This



DOUBLE TRIANGULAR BANDAGE
for fractures of the Humerus



WIRE LADDER SPLINT REINFORCED
BY VELPEAU BANDAGE FOR FRACTURE
OF HUMERUS AND SHOULDER JOINT INJURIES

Fig. 1. (From Hampton: Wounds of the Extremities in Military Surgery, C. V. Mosby Co. 1951.)

means that a sharp hatchet will be standard equipment for a first aid team which, of course, must also have adequate supplies of cotton batting for padding and broad muslin bandages for application of the splints.

Upper Extremity: Adequate splinting of injured upper extremities is seldom a problem. Assuming that the other upper extremity of the casualty is uninjured, he will usually provide some some degree of splinting himself as he scurries away from further danger by holding his injured upper extremity against his chest wall and abdomen.

For injuries distal to the elbow, a board splint is desirable but is really essential only when both bones of the forearm are completely broken. For injuries above the elbow, the position of the arm at the side and the elbow flexed to about 90 degrees is by far the most comfortable. Adequate splinting for these is best provided by the use of a sling to support the forearm and by binding the arm to the chest with another sling serving as a swathe or with several turns of a roll of bandage (fig. 1). Actually, the individual's shirttail can be

turned up and pinned so that it serves as a sling. Casualties with only upper extremities involved are, of course, walking injured and, in these, a sling alone such as the upturned shirttail may be sufficiently effective. If because of shock or other

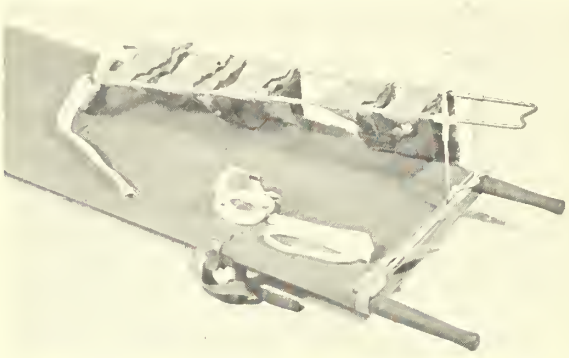


Fig. 2. Half-ring leg splint and accessories for emergency splinting of injuries of leg, thigh and knee and hip joints. Triangular bandages are used for the slings. Note strap for traction (the hitch). Note also that the combination foot and splint support is shown fixed to the litter bar splint. (From Hampton: Wounds of the Extremities in Military Surgery, C. V. Mosby Co. 1951.)

injuries, the casualty is not able to walk, the upper extremity must be bound more securely to the chest wall.

The full ring hinged arm traction splint is mentioned only to condemn it. It has no place in the emergency splinting of injuries of the upper extremity. This splint was given a trial during the early stages of World War II and was found to be totally unsuited for emergency splinting. It was promptly discarded and is no longer standard equipment of the medical aid men for emergency splinting on the battlefield or for splinting in the stations of the divisional area.

Lower Extremities: If standard traction splints,



Fig. 3. Application of half-ring leg splint for emergency splinting of injuries of the leg, thigh and knee and hip joints. (From Hampton: Wounds of the Extremities of Military Surgery, C. V. Mosby Co. 1951.)

Thomas or hinged half ring, are available, the splinting of fractures of the femur or bones of the leg will be the most effective. They should be applied by the technics outlined in Red Cross or Military Manuals (figs. 2 and 3). Care must be taken to make certain that the traction hitch does not cause excessive pressure on the dorsum of the foot. The traction hitch is applied over the shoe which is not removed. Only moderate traction is necessary.

If standard wire ladder splints are available, they can be used to provide excellent emergency splinting for fractures of the ankle region and foot (fig. 4). These splints are lighter to carry and more easily applied than board splints.

For injuries of the lower two-thirds of the leg and ankle, the ideal improvised emergency splinting consists of two or three padded coaptation board splints which extend from the upper portion of the thigh to below the foot (fig. 6). For injuries of the thigh at any level, the knee and the upper third of the leg, the same form of splinting is indicated except that the lateral board must extend to the axilla and be bound securely to the abdominal and chest walls (fig. 7). When board splints are applied to the lower extremity, sufficient padding properly arranged must protect

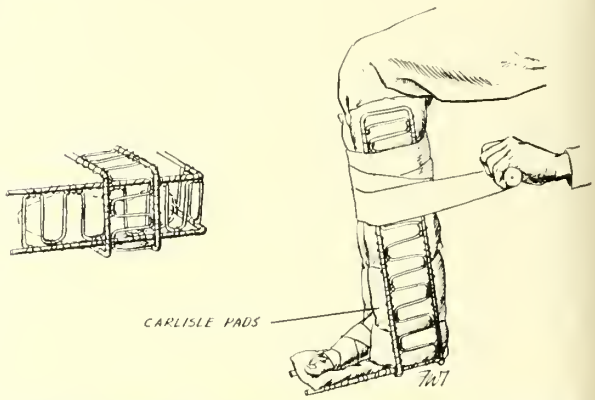


Fig. 4. Double wire ladder splint for foot and ankle. (From Hampton: Wounds of the Extremities in Military Surgery, C. V. Mosby Co. 1951.)

the malleoli and also the head of the fibula to avoid pressure on the peroneal nerve which could cause peroneal paralysis.

Spine: With suspected fracture or dislocation of the cervical spine, the casualty should be transported face-up preferably with a rolled towel or comparable small pad beneath the neck and with sandbags, bricks or other such material on each side of the head.

With these injuries of the dorsal or lumbar spine, the face-down position is indicated, care being taken to avoid flexion of the spine as the casualty is placed on a litter. If concurrent facial or chest injuries contraindicate the face-down position and dictate that the patient be face-up, a roll such as a folded blanket beneath the small of the back is desirable.

INITIAL WOUND SURGERY

Although all open wounds following a civilian disaster are, just as in military surgery, potentially serious, many by their location and extent are

immediately of major importance. Examples are penetrating wounds of the abdomen, sucking wounds of the chest, wounds of the face and neck which destroy or produce obstruction of the airway, and traumatic amputations. Others may rapidly become of major importance because of hemorrhage and shock. These include wounds of major peripheral blood vessels, massive soft part wounds and open (compound) fractures, particularly those of the femur and upper tibia.

Casualties with any of these injuries carry high priority for evacuation, hospitalization, resuscitation and operative surgery. As first priority patients, they will be pulled out of the evacuation stream and shunted into the first available emergency hospital. In the shock ward there, resuscitative measures will be administered, again according to priorities established by the relative condition of the casualties admitted. Finally, on the basis of the relative necessity for early surgery, selection for it will be made. "The Problems of

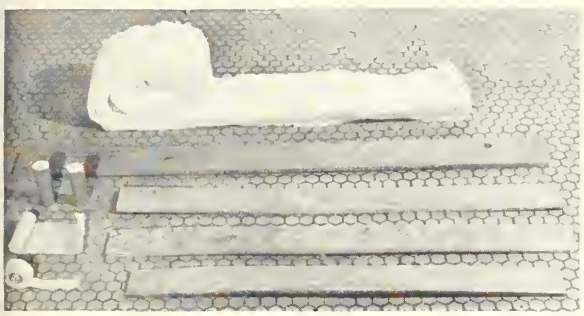


Fig. 5. Board splints and accessories for emergency splinting of the lower extremity.

Triage" comprise a separate article in this symposium but it is pointed out here that the keenest surgical judgment usually by the most highly qualified and experienced surgeon in the field of trauma will be required repeatedly to make the proper selection of cases according to the urgency of the wound or injury and the patient's reaction to it.

In a civilian disaster such as an atomic bomb explosion, there will be, of course, a tremendously large number of casualties with major injuries which warrant first priority medical service. The provision of emergency hospital facilities and professional personnel for them comprise a problem in logistics which is beyond the scope of this presentation. It is difficult to visualize how the necessary care can be given within several days for all of the life and limb endangering injuries which may be anticipated. This means, of course, that wounds and injuries of a lesser severity which are not considered to be life or limb endangering are likely to receive little if any immediate surgical attention. The principles of the management of the relatively lightly injured or wounded, however, are the same as those for the more seriously wounded which warrant first priority classification. This is particularly true insofar as initial wound surgery is concerned since adequate debridement of the wounds of lesser severity will go far to prevent complicating infection which might make them life or limb endangering.

In the paragraphs which follow, initial wound surgery, the therapy of shock and other preopera-

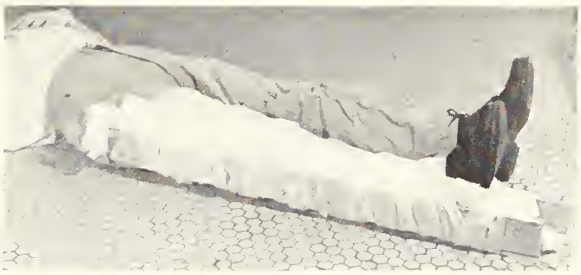


Fig. 6. Board splints applied for emergency splinting of fractures of both bones of the leg.

tive preparation and the postoperative splinting of casualties with major open wounds will be outlined under the assumption that emergency hospitals and adequately trained professional personnel can be made available just as these are provided in the hospitals of the combat zone for the management of the battle wounded with first priority wounds. As mentioned previously, the surgical management of open wounds of less severity is governed by the same principles and technics as major open wounds and injuries.

Preoperative Preparation.—A rapid but adequate examination of each casualty admitted to the emergency hospital is indicated just as soon as he has been placed upon his bed, cot or pallet. This is essential to determine the extent and location of all wounds and injuries and to evaluate

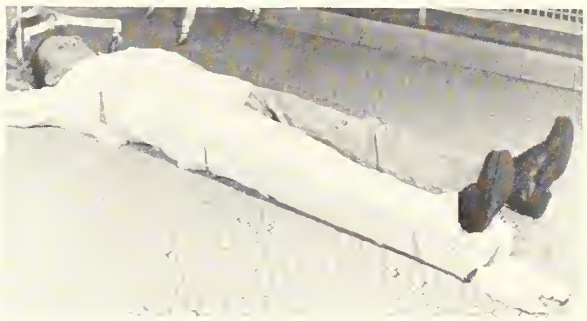


Fig. 7. Board splints applied for fracture of the femur.

his general condition. Assuming that adequate blankets are available, all clothing should be removed. Usually it will be necessary to cut it away. Blankets are placed under as well as over the patient to prevent chilling. As part of the admission examination, each dressing is inspected and each emergency splint is checked and, if necessary, these are reinforced or readjusted. In wounds or injuries involving the lower extremities, shoe laces if still in place are cut so that swelling will not

result in constricted circulation to the distal portion of the foot.

A patient with a tourniquet about a limb demands prompt special attention. Consideration is given to the time it has been in place and to its removal with due regard however for the danger to life if it is removed and additional hemorrhage occurs. Of course, any evidence of active hemorrhage is an indication for the prompt application of a tourniquet to prevent additional loss of blood. In these casualties, shock should be treated as outlined later as rapidly as possible and a high priority for surgery is indicated.



Fig. 8. Local and systemic measures employed for the therapy of shock in a patient with a major would of an extremity. An occlusive dressing covers the wound. The extremity is splinted and precautions have been taken to prevent pain from swelling of the foot by cutting the shoe laces and the sides of the shoe. The foot of the cot is elevated. Oxygen therapy, blood transfusions and gastric drainage are in process. The blood pressure is being checked. Note that blankets have been placed under as well as over the body. (From Beecher: Resuscitation and Anesthesia for Wounded Men, Charles C Thomas Company.)

Shock.—Wound or traumatic shock may be defined as the state of collapse which is likely to follow several hours after severe trauma as a result of the reduction in the effective circulating blood volume. The diagnosis is made entirely by clinical observations. There is a fall in the blood pressure, an increase in the rate and the deterioration in the quality of the pulse, coolness and pallor of the skin particularly the extremities, excessive thirst, sweating and, in some casualties, mental distress. There is a prolongation of the time for the return of color after pressure blanching of the skin or finger nails. In evaluating the state of shock, the trend of the pulse rate and blood pressure is highly significant. A rising pulse and a falling blood pressure are danger signs while the reverse indicates improvement.

Resuscitative Measures (Therapy of Shock) (Fig. 8).—Blood Replacement: The adequate judicious use of whole blood is the most effective single measure in the management of shock complicating major wounds and injuries. The amount required for adequate resuscitation varies but it is not to be underestimated. Blood should be given in sufficient quantities to overcome the most severe symptoms and signs of collapse and then, if surgery is indicated, additional amounts are necessary to enable the patient to withstand the strain of anesthesia and operation and compensate for the amount of blood to be lost on the operating table.

If the degree of shock demands it (that is, if the blood pressure has fallen to 60 millimeters Hg or less), the first pint of blood may be given under pressure in about five minutes. Subsequent transfusions after the blood pressure has risen to 80 millimeters of mercury should be given at a rate of about 500 cc. over a half hour. While adequate quantities of blood are indicated, it is not essential to restore the blood pressure to a normal level. The objective is sufficient resuscitation to bring the wounded man into safe condition to withstand anesthesia and initial wound surgery. Operation may safely be undertaken when the following have been achieved: (1) when blood replacement in combination with other measures useful in shock has restored the blood pressure to from 80 to 90 millimeters of mercury in young adults, 100 to 110 millimeters of mercury in the middle aged, and 120 to 130 in the aged; (2) when the pulse is decreasing in rate and improving in quality; (3) when other signs and symptoms of shock are decreasing or have disappeared, and (4) when sufficient blood is available to cover the possible loss at operation. When these have been obtained, and surgery on the wound or wounds is indicated, early operation is advisable as shock can again become reestablished. A second course of resuscitative measures is seldom as effective as the first. Moreover, the proper timing of surgery after resuscitation materially reduces the amount of whole blood necessary for the individual casualty.

Plasma and Plasma Expanders: Plasma alone cannot adequately prepare for surgery any seriously wounded man who has sustained a significant loss of blood. The outstanding deficiency is in the hemoglobin component which must be made up by the hemoglobin available only in whole blood.

This does not mean that plasma is not useful. It can be a life saving agent which keeps the patient alive until blood is available. It can for a limited time elevate the blood pressure to a level compatible with life. It should be considered, then, as stop-gap, but highly essential, therapy. It can be quickly given by vein while preparations are being made to supply whole blood to a seriously injured man in severe shock.

Dextran appears at this time to be the best of the plasma expanders and there is some evidence that it is preferable to dried plasma as a temporary resuscitative agent. Final evaluation and the proper place for this and comparable agents must await further laboratory and clinical study.

Of course, in any consideration of the therapy of severe shock in a large number of casualties such as is to be expected following a civilian disaster, it is entirely reasonable that adequate supplies of whole blood cannot be made available quickly. Plasma and plasma expanders may be the best available intravenous agents and even these may be lacking. Certainly, surgeons will be taxed to determine which casualties shall receive the limited supplies of blood, dried plasma and plasma expanders. Nevertheless for the purpose of this symposium, it has appeared preferable to discuss the relative values of these agents as if they all were available.

Other Parenteral Therapy: Glucose and salt solutions are not indicated in the treatment of shock. Whatever improvement may follow their administration is transient as the fluid administered is promptly lost from the circulation. After shock has been overcome by blood replacement and other measures, however, these agents in adequate quantities are definitely indicated to obtain and maintain sufficient hydration. This is particularly true during long delays before initial wound surgery since it is unwise to permit fluids by mouth because whatever is ingested is likely to remain in the stomach for many hours when men have been in shock and have been sedated. The judicious use of these solutions intravenously for hydration purposes is highly important in avoiding anuria and its complications.

Supplementary Measures: While whole blood replacement is the keystone of a program of resuscitation, other simpler measures are also useful and should not be omitted.

Conservation of Body Heat: Chilling should be avoided by the liberal use of blankets. Several folded blankets beneath the patient are indicated and this is a precaution that may be easily overlooked. Covering over the body sufficient for comfort is all that is wanted. Sweating is undesirable. The use of external heat to warm the body is contraindicated. External heat serves only to dilate the peripheral vascular bed and thus decreases the flow of blood to the vital centers of the brain.

Position: Unless chest or head wounds contraindicate the head-down position, all wounded or injured men in shock should be placed in the Trendelenburg position with the foot of the cot or litter elevated about 12 inches. In fifteen to twenty minutes, improvement is usually evident even before blood replacement therapy has been started. When the systolic blood pressure reaches 80 millimeters Hg, the foot of the litter is gradually lowered. The change in position is gradually made over a period of fifteen to thirty minutes rather than all at one time.

Relief of Pain: The dangers of excessive use of opiates have already been discussed. Additional morphine is indicated only for the relief of pain which is leading to the decline in the general condition of the injured person. Morphine should not be given to induce sleep or relieve apprehension. Small doses of barbiturates are highly preferable for this purpose.

Oxygen Therapy: The precise value of oxygen therapy in shock may not have been established but its use is justifiable because of its ability to produce clinical improvement in the form of color changes in the skin and lowering of the pulse rate. If cyanosis is present, oxygen is definitely indicated. Oxygen is conveniently administered by nasal tube or, if signs of oxygen shortage are not promptly relieved, an anesthesia apparatus can be utilized to secure higher concentrations in the inspired air.

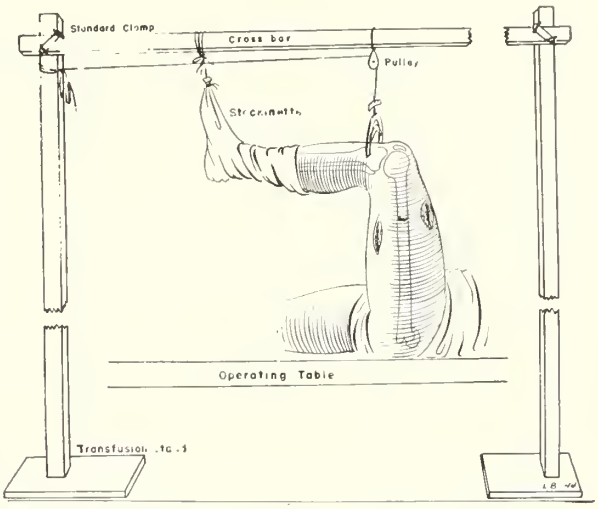


Fig. 9. Position of extremity for surgery. Kirschner wire may be placed in lower femur or upper tibia. If skeletal traction is not feasible this position may be maintained by slings under the leg. (From Hampton: Wounds of the Extremities in Military Surgery, C. V. Mosby Co. 1951.)

Splinting and Care of the Wound: It is repeated for emphasis that protection of the wound by an occlusive dressing and adequate emergency splinting of severely injured extremities which are the site of fractures or of only massive soft part wounds are important parts of the therapy of shock. Throughout the application of the other resuscitative measures which have just been outlined, the dressings and splintings should be repeatedly checked to make certain that they are adequate and doing all possible to relieve the patient's discomfort.

Preparation for Anesthesia.—Emptying of the stomach by induced vomiting or if necessary by gastric lavage is often an important preoperative measure. Ingested food and fluids are likely to remain in the stomach for eight to ten hours after injury and unless the time lag from injury to anesthesia exceeds this, emptying of the stomach is indicated as a precaution against aspiration of gastric contents under anesthesia.

As a rule, additional sedation as a preparatory

measure for anesthesia will not be indicated. Atropine sulphate, however, is essential and is preferably given intravenously ten to fifteen minutes before anesthesia by the anesthetist in a dosage of 1 100 to 1 150 of a grain depending upon the age and size of the patient.

Antibiotic Therapy.—During the waiting period before surgery during which shock has been

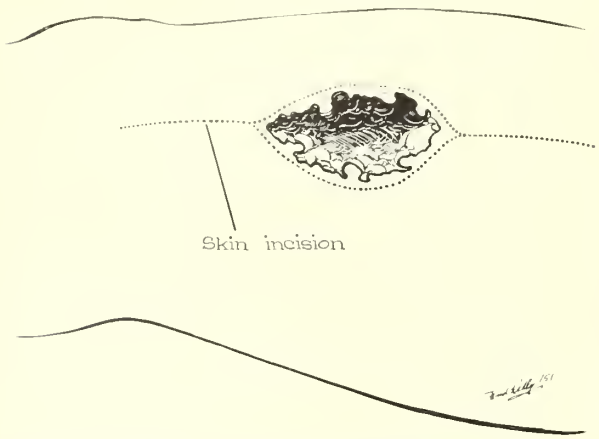


Fig. 10. Technic of initial wound surgery of soft part wounds. Incision of skin in long axis of extremity. (From Hampton: Wounds of the Extremities in Military Surgery, C. V. Mosby Co. 1951.)

treated, casualties with major open wounds should receive antibiotic therapy. At present, penicillin in some form intramuscularly appears to be the one of choice.

SURGICAL PLANNING

Surgical management of the tremendous number of casualties to be anticipated in event of a civilian disaster calls for a plan which provides "the greatest good for the greatest number," just as in military surgery. It must be planned in relation to the disaster conditions on the one hand and the welfare of the casualty on the other. In the emergency hospital, the surgeon must visualize both his own duties and the mission of his hospital in the light of the duties of other surgeons and the mission of other hospitals farther removed from the disaster area. When he thus conceives of disaster surgery he will refrain from performing an operation, however technically perfect it may be, at the wrong time or in the wrong place. On the other hand, he will employ in all his operations, the type of standardized surgical procedure designed for that particular time and that particular installation.

This concept envisages the management of major open wounds in stages, each stage probably in a different hospital. Each surgical phase will have definite objectives, and the type and extent of the surgical procedures employed must conform to those objectives.

Disaster surgery for major open wounds may be classified into:

(a) Initial Wound Surgery: To be performed in emergency hospitals adjacent to the disaster area.

(b) Reparative Wound Surgery: To be performed in fixed hospitals rather far removed from the disaster area.

(c) Reconstructive Surgery: To be performed in fixed hospitals at a much later date when conditions simulate the normal.

This division of surgery of the injured and wounded following a civilian disaster is, of course, comparable to the division of surgery for the battle wounded in military surgery.

INITIAL WOUND SURGERY (DEBRIDEMENT)*

The Objectives of Initial Wound Surgery.—The objectivies of the initial wound operation on a major open wound are fourfold: (1) to save life, (2) to save limb, (3) to prevent or eradicate infection and (4) to make the patient reasonably comfortable for transportation. These objectives are accomplished by: (1) the arrest of life endangering hemorrhage, (2) the removal of foreign bodies and material within the wound, (3) the excision of tissues destroyed by the agent of wounding or devitalized by destruction of the blood supply to them, (4) the provision of drainage by leaving the wound open (exceptions noted below) and (5) proper immobilization for transportation purposes only. The replacement of blood losses and the administration of antibiotic agents in therapeutic dosages are valuable adjuncts.

Appraisal of the Wound.—While sufficient examination of the patient was performed on admission to identify the wounds and determine the patient's general condition, the operating surgeon should make a more detailed examination when the patient is on the operating table† with emergency splints and dressings removed. This is done before anesthesia as a rule. The important points in this examination include a search for all wounds, determination of the presence or absence of arterial pulsations distal to the wounds (if pul-

* The term initial wound surgery is preferable to the term debridement to describe the first surgical attack upon a wound but that it will be accepted as a substitute in the future is highly doubtful. Since World War I, the term debridement has become entrenched in American medical literature to indicate the operation usually performed as soon as possible after injury on contused, jagged, or dirty lacerated wounds. Actually this is an adaptation of the use of the word debridement by the Americans and British. Debridement, a French word, means only the incision in that language but the Anglocized usage indicates the complete operation on the wound. Initial surgery is the preferable term because it includes not only an incision but counterincision if necessary, the precise arrest of hemorrhage by clamp and ligature, the removal of foreign bodies and other foreign material, the excision of devitalized tissue, the dressing of the wound and if indicated, postoperative transportation splinting.

† It seems certain that sufficient operating tables cannot be made available for the initial wound surgery of all casualties even those with major wounds. Probably the litter on which the patient is transported to the operating room will be supported by its handles on boxes or saw-horses and itself serve as an operating table. This plan actually has a number of advantages. It conserves the time and effort of personnel. More important, it spares the patient the move from the litter to the operating table before operation and from the table to the litter at the end of the procedure. This is highly desirable because casualties who have previously been in shock are likely to suffer recurrent shock if they are moved about.

sations cannot be obtained, then major blood vessels which may be damaged must be visualized and properly treated) and appraisal of the function of the major nerve trunks to an extremity. The information gained by the operating surgeon through a thorough examination of the patient on the operating table will better enable him to plan the location and extent of incisions and counterincisions and to estimate the extent of the forthcoming operative procedure.

Position on the Operation Table.—The selection of an operative position which will best facilitate the surgical attack on an open wound or wounds is not always easy. Of course, the on-the-back position is the simplest and is indicated if it is adequate. Unfortunately, it often is not and frequently the face-down or the on-the-side positions must be used. Moreover, it often may be necessary to change the position on the operating table particularly in the presence of multiple wounds. As outlined, the changing of the position of a patient with major wounds is not desirable but thorough excisional surgery can be achieved only when free access to all wounds is provided and this is often possible only by changing the operative position during the operative procedure.

In many extremity wounds the best circumferential access may be obtained by suspending the extremity. An upper extremity may be held by means of a hitch about the wrist tied to an intravenous stand. A lower extremity with a massive thigh wound may be suspended in the 90-90-90 operative position (fig. 9).

Preparation of the Operative Field—Skin preparation should include a wide area to allow for extension of the incision in either direction and for counterincisions. With wounds of the extremity, it is always preferable to prepare the entire circumference of the extremity.

The only agent which need be used is one which contains G-11 (hexachlorophene). When the operative field has been thoroughly cleansed with a detergent or soap containing this preparation and the lather wiped away with a sterile towel, the field is ready for draping.

Of course, the supply of sterile linens must be conserved as much as possible. Often, four sterile towels draped about a wound will be all that is necessary. When draping within the sterile field is indicated, the distal portion of an extremity can be adequately protected by sterile stockinet which is rolled over the foot or hand and up the limb to the distal level of the prepared field. This serves to minimize the quantity of draping materials.

Principles of Initial Wound Surgery (Figs. 10, 11, 12).—The initial wound surgery or debridement of major open wounds is always conducted on the basis of certain principles:

(1) The length of the time lag from injury to operation is of no importance in the decision whether or when to debride the wound. Adequate debridement is indicated in all wounds unless there are signs of invasive spreading infection with the cardinal signs of inflammation such as cellulitis and lymphangitis. In the presence of these, antibiotics, immobilization, and the application of warm wet dressings are indicated until a more optimum time for surgery can be selected. There should be no hesitation, however, in promptly draining septic hematomas, fascial plane abscesses and large masses of dead autolyzing tissue.

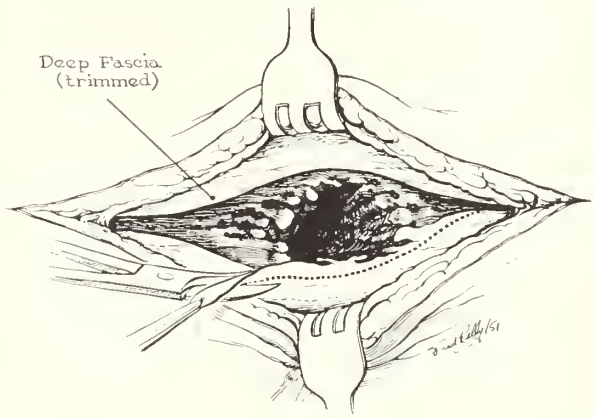


Fig. 11. Exposure of depths of wound, excision of devitalized fascia. Damaged muscle in depths of wound is visualized. (From Hampton: Wounds of the Extremities in Military Surgery, C. V. Mosby Co. 1951.)

(2) An adequate light and competent assistance are basic requirements.

(3) The operative procedure is carried out in an orderly manner. There is no place in initial wound surgery for haphazard bloody cut and slash technics.

(4) Adequate exposure is essential for the complete excision of devitalized tissue. Bold incision is, therefore, the first step at operation. The line of incision will usually parallel the long axis of the extremity although on the hand, foot, and buttock, the incision may follow the natural lines of the skin.

(5) Dead and devitalized tissues must be completely excised. This is the most important single step in the prevention of sepsis in an open wound. Failure to excise devitalized muscle seeded with pathogenic bacteria will lead to prolonged wound sepsis and perhaps life endangering gas gangrene. Skin which is devitalized must be excised but as little as possible is removed and no normal skin is sacrificed. Usually, 2 to 3 millimeters of skin is all that should be excised. In order to gain free access to devitalized muscle for thorough excisional surgery, the fascial layers must be incised as freely as the skin.

The decision as to what muscle tissue should be excised is not always easy. Muscle which does not bleed when cut is, of course, not viable and only bleeding muscle should remain. It should be remembered that muscle which contracts when it is pinched is unquestionably alive but the reverse is not true; failure to contract does not necessarily mean that the muscle is dead and

should be excised. Freely bleeding muscle regardless of contractility is viable.

A saucerized type of wound is desirable except in through-and-through wounds (fig. 13). Large dead spaces in which serum and wound exudate could collect must be eliminated by counterincisions and dependent drainage.

(6) Retained foreign bodies should be removed. It should be kept in mind that the path to a retained foreign body is the track along which devitalized tissue will be found. Bits of clothing, shoe leather, or other foreign material may have been driven into the wound and must be removed. Deep recesses containing foreign bodies often may be best approached by counterincisions.

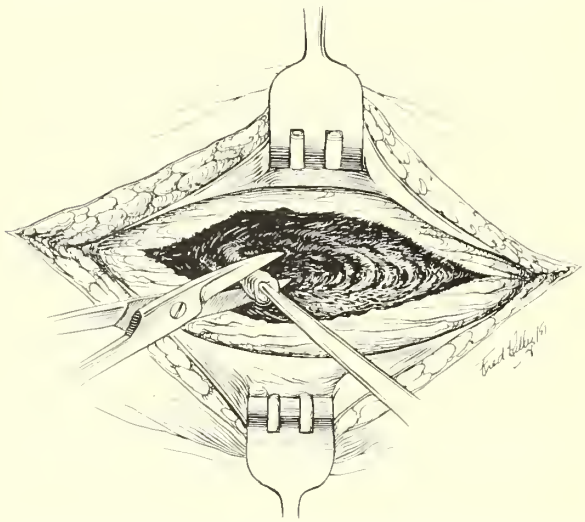


Fig. 12. Saucerized wound. Debridement is almost completed. The last of the devitalized muscle is being cut away with scissors. (From Hampton: Wounds of the Extremities in Military Surgery, C. V. Mosby Co. 1951.)

(7) Incisions should be left open and no sutures are used following the excisional phase of surgery of major open wounds of the extremities. The only exceptions are that flaps of skin in wounds of the hand may be tacked in position to protect tendons, bones, and joints from exposure and, following debridement of wounds of joints, the synovia is closed. Wounds of the head, face, and neck should be sutured immediately after thorough debridement. In wounds of the thoracic and abdominal cavities, after the intrathoracic or intra-abdominal surgery has been completed, there should be sufficient closure to seal off the cavities but the skin should remain unsutured.

With the exceptions just noted, the recommendations that wounds remain unsutured is well founded. Major wounds sustained during a civilian disaster because of a prolonged time-lag between injury and debridement will be not only contaminated but infected with bacteria. Thorough debridement is an important step in the eradication of this infection but a period of open wound drainage is also essential. A clinically clean wound four to seven days after debridement is the best evidence of a thorough debridement. To close these wounds by suture primarily is to invite disaster such as gas gangrene particularly since the following problems must be considered.

During the postoperative period, there cannot be close observation by the surgeon or his assistants as they will be busy in the operating room with other casualties. Moreover, just as soon after operation as they become safely transportable, patients in an emergency hospital are likely to be evacuated to a permanent hospital sufficiently far removed from the disaster area. There will be, therefore, no continuity of management by the operating surgical team. In addition, if time and facilities in the permanent hospital permit, open wounds may be closed by suture or skin graft several days later provided they are clinically clean. That delayed close of clinically clean wounds will give prompt and sound wound healing in the overwhelming majority of instances was demonstrated to some extent during World War I, to a large extent in World War II, and again during the present Korean incident. Delayed closure of clinically clean wounds without study of their bacterial flora is practically without danger. Delayed closure under these circumstances, therefore, is highly preferable to primary closure.

Dressing of the Wound (Fig. 14).—The raw surfaces of the wound should be covered with a fine mesh gauze. As a rule, sterile roller bandage will suffice for this purpose although a finer mesh gauze is desirable. Whether the gauze is dry or impregnated with petrolatum jelly or a water soluble ointment is of little importance. Single strips of gauze are arranged side by side around the perimeter of the wound so that all raw surfaces are covered and the ends of the strips are in the depths of the wound. Definitely, the wound should not be packed. The purpose of the dressing is merely to hold the raw surfaces apart and provide drainage from the depths of the wound. To pack a wound is to plug it and to eliminate effective drainage. After fine mesh gauze strips have been placed in the wound, they are covered with standard gauze dressings. If it is feasible, a moderate degree of pressure is desirable.

APPLICATION OF PRINCIPLES OF DEBRIDEMENT TO SPECIAL INJURIES

Fractures.—Fractures sustained in the disaster area will be managed in two stages. In closed fractures admitted to an emergency hospital because of shock therapy, it will consist of correction of gross malalignment and application of adequate transportation splinting (to be described later). Efforts at definitive reduction will not be made as a rule as this will be the mission of the fixed hospital sufficiently far removed from the disaster area.

In open fractures, the principles of debridement described previously, are completely applicable. All fragments of bone which have any soft part attachment are left in place. Totally loose small

fragments should be removed as these probably are already sequestra. Grossly, malaligned comminuted fragments may be manually placed in some where near normal position under direct visualization. Again, effort at definitive reduction is not made although gross malalignment is corrected during the application of transportation splinting.

Open Joint Wounds.—In open wounds of joints the principles of debridement outlined previously should be extended to include wide arthrotomy perhaps through a standard arthrotomy incision sufficient to permit removal of all foreign bodies and material and devitalized areas of articular cartilage. Loose chips of bone should be removed. The joint cavity should be thoroughly irrigated and then the synovial membrane and perhaps the capsule closed by suture. The remaining soft part wound is not closed by suture. Local instillation into the joint of 5 to 10 cc. of saline solution containing from 25,000 to 50,000 units of penicillin is worthwhile. Adequate transportation splinting is mandatory.

Nerve Injuries.—These are suspected from motor and sensory deficits found on examination prior to anesthesia. The most that should be done at initial wound surgery concerning injured major peripheral nerve trunks is their visualization sufficient to permit an accurate appraisal of the damage and recording of the findings on a record but the dissection should not be extended to permit this. Primary nerve suture is contraindicated. Moreover, it is unwise to approximate the nerve ends by a single suture. The suture itself may do further damage to the nerve trunk and such a procedure may cause the nerve trunk to be strung across the dead space left in the wake of a debridement of dead muscle. This is unwise and it is preferable to allow the nerve ends to retract to the shelter provided by surrounding healthy muscle. If the nerve ends do not find such protection, fascia may be tacked over them by suture to avoid leaving them exposed in the wound.

Vascular Injuries.—Damage to a major artery should always be suspected when shock has been severe and massive blood replacement has been necessary to overcome it, when it has been found necessary previously to apply a tourniquet in the disaster area or in the emergency room to arrest hemorrhage or when the arterial pulsations distal to the wound are absent. A cold pale or blue insensitive hand or foot indicates arterial injury with impending gangrene.

Any or all of these findings inform the surgeon that the major artery of the extremity must be exposed at initial surgery and its integrity verified. A tourniquet should be used until the vessel has been isolated and properly cared for. It is then removed in order that the adequacy of the blood supply of the remaining muscle tissue may be verified and that the completeness of hemostasis may be checked. The vessel in which the damage is suspected may be exposed as a rule through an extension of the wound but a separate incision is frequently preferable. The latter permits isolation of the vessel in healthy tissue from which it may be traced to the site of the suspected injury. Major peripheral nerve trunks usually accompany major arteries and serious nerve injuries may follow the application of hemostats except under full vision, hence the importance of

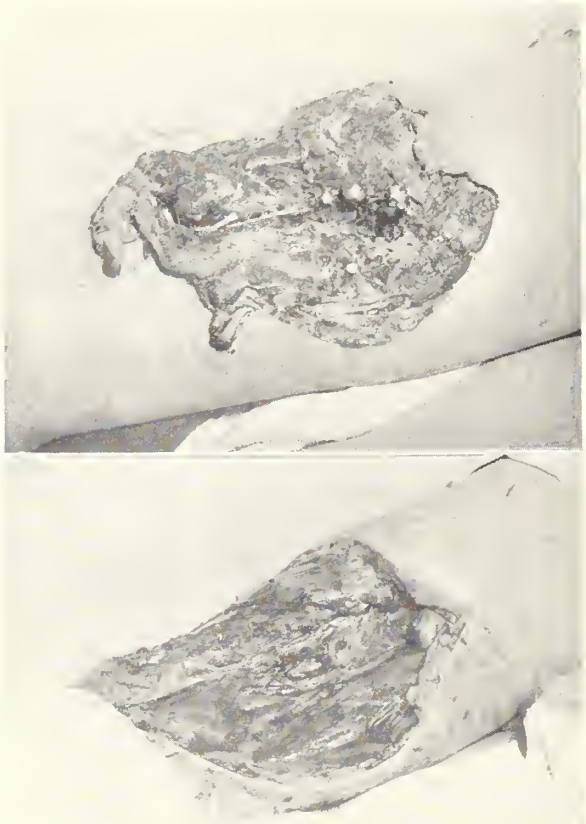


Fig. 13. Debridement of large ragged wound of anterior surface of right thigh. A. Appearance of wound prior to initial wound surgery. B. Wound following adequate excision of devitalized tissue before dressing is applied. (From Hampton: Wounds of the Extremities in Military Surgery, C. V. Mosby Co. 1951.)

isolation of the arterial injury before a hemostat is applied.

When the artery is found to be damaged, it must be either repaired or ligated. While repair is highly desirable, it usually will be impracticable, except in small incomplete arterial lacerations. Efforts to repair complete lacerations are not likely to be successful. The length of the time-lag between injury and repair will usually have led to thrombosis of the vascular tree distal to the site of arterial injury with subsequent irreversible ischemic changes in that portion of the extremity. Moreover, anticoagulant therapy, an important adjunct to the success of vascular repair, will be hazardous and impracticable. Furthermore, the time and effort spent in this kind of surgery which is not likely to bear fruit are scarcely justified when many other casualties will be awaiting sur-

gery which may be necessary to save their lives.

When an artery is found severed or so badly lacerated that its future function is hopeless, each end is doubly ligated, the distal ligature on the proximal segment being supplemented by transfixion suture. Ligation of the accompanying vein has not been established as advantageous and is not necessary unless it too has been sufficiently damaged to warrant that procedure.

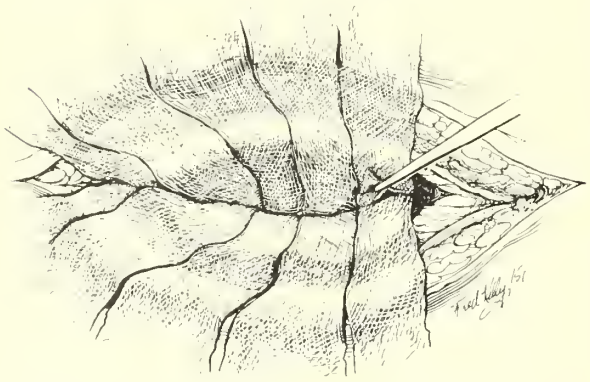


Fig. 14. Appearance of wound after strips of dry or petrolatum-impregnated fine mesh gauze have been introduced loosely into the depths at completion of debridement. (From Hampton: Wounds of the Extremities in Military Surgery, C. V. Mosby Co. 1951.)

The following postoperative measures are definitely indicated following injury and ligation of a major vessel to an extremity.

(1) The position of the extremity should be horizontal or slightly dependent even though a moderate degree of edema should result. Elevation, which might minimize edema, does more harm by retarding the arterial flow through the collateral circulation.

(2) External heat is definitely contraindicated. There is considerable evidence to the effect that moderate cooling of the extremity such as that obtained by leaving it uncovered and exposed may be advantageous. A temperature of about 65 degrees appears preferable.

(3) Paravertebral sympathetic blocks with 1 per cent procaine hydrochloride are carried out every twelve to twenty-four hours to insure maximum vasodilatation. If the response is good, as manifested by improvement in color and increase in the temperature of the limb, but if the improvement is only transient, lumbar sympathectomy should be considered.

(4) Blood replacement is indicated in amounts adequate to reestablish a normal blood volume as this predisposes to sufficient oxygenation of the tissues including those of the injured extremity.

(5) A plaster cast placed on the extremity (because of a fracture) at the conclusion of initial surgery is always bivalved and the anterior half removed in order to permit better observation of the limb.

The incidence of gangrene following interruption of the major arterial flow to an extremity varies with the artery involved. It is much higher in the lower extremity than in the upper extremity. Table 1 shows the incidence of gangrene following injuries of major arteries dues to missile wounds during World War II. The prognosis for survival of the limb following arterial injuries in event of a civilian disaster will probably be better than those indicated by the table because the mechanism of vessel injury is likely to destroy less collateral than a high velocity missile.

The Signs of Vascular Insufficiency: The first sign of vascular insufficiency is pain and hypersensitivity in the distal portion of the limb. A few hours later, it becomes insensitive and pain disappears. Active motion of the digits is quickly lost though it may be retained for some time in the ankle or wrist joint. Sensation to touch or pinprick is lost distal to the middle third of the leg or forearm. The skin is cool and cyanotic. The phenomenon of pressure blanching with return of color after release of the pressure cannot be demonstrated. A few hours later, mild edema of the limb is evident. Then the muscles of the leg or less often the forearm become hard, tense and swollen. The hard tense swelling of the muscles of the leg often should be treated by fasciotomy. The effectiveness of this surgical procedure has not been definitely proven but, on theoretical grounds, it should be advantageous. An incision is made postero-medially to decompress the gastrocnemius-soleus group of muscles and antero-laterally to decompress the anterior tibial compartment.

Table 1. *Regional Distribution and Incidence of Gangrene in 1,069 Vascular Injuries in Missile Wounds**

Vessel	Injuries	Gangrene and Amputation	Deaths
Upper extremity	350	50 (14.3%)	3
Subclavian	10	2	2
Axillary	19	6	1
Brachial	198	31 (15.7%)	
Radial	67	3	
Ulnar	39		
Radial and ulnar	17	8	
Lower Extremity	719	264 (36.7%)	2
Common iliac	3		
Internal iliac	1		
External iliac	18	5	1
Femoral	155	70 (45.2%)	1
Superficial femoral	34	19 (55.9%)	
Profunda femoris and superficial femoral	22 1	1	
Popliteal	179	125 (69.8%)	
Anterior tibial	94	3	
Posterior tibial	153	7	
Anterior and posterior tibial	46	30	
Peroneal	7	1	
and posterior tibial	5	2	
and anterior tibial	1	1	
Total	1069	314 (29.4%)	5

* Compiled by Colonel Frank B. Berry, Surgical Consultant, Seventh Army, U.S.A. These statistics represent the experiences of the forward hospitals supporting the 7th Army between August 15, 1944, and April 30, 1945. (From Hampton: Wounds of the Extremities in Military Surgery, C. V. Mosby & Co. 1951.)

Amputations.—In amputations performed as part of initial wound surgery, the indication in the overwhelming majority will be the extent of the injury. Many of the casualties will have traumatic

amputations. In a relatively few with major arterial injuries, the signs and symptoms of ischemic gangrene will be so well established that primary amputation will be advisable. In a still smaller number, severe sepsis or gas gangrene may be established and indicate amputation.

Amputations should be performed at the lowest level of viable tissue. The level should never be advanced proximally in order to reach a site of election. A definitive reamputation at the site of election at a later date is to be anticipated.

The open circular (properly performed guillotine) amputation should be employed in the overwhelming majority (fig. 15). In a few instances, an open flap technic may be employed when healthy skin is available below the level at which the

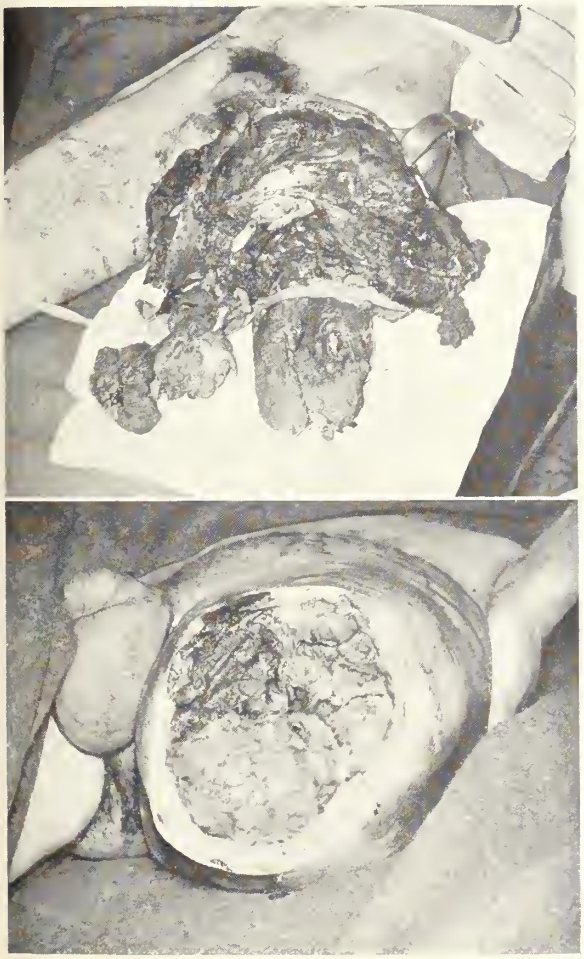


Fig. 15. Traumatic Amputation of left thigh. A. Appearance of wound with tourniquet applied proximal to it immediately after injury. B. Appearance of stump after circular guillotine amputation at lowest level of viable tissue (From Hampton: Wounds of the Extremities in Military Surgery, C. V. Mosby Co. 1951.)

amputation of the bone in dictated by an extensive fracture or traumatic amputation. Also in those instances in which primary amputation is indicated because of ischemic gangrene the open flap technic should be considered. There is no place for the closed flap technic.

The open circular technic has a number of advantages:

(1) It is readily performed even by an inexperienced surgeon because the procedure is simple.

(2) When it is used, there is no inclination to shorten the bone in order to facilitate the fashioning of flaps and to aid a delayed closure of them.

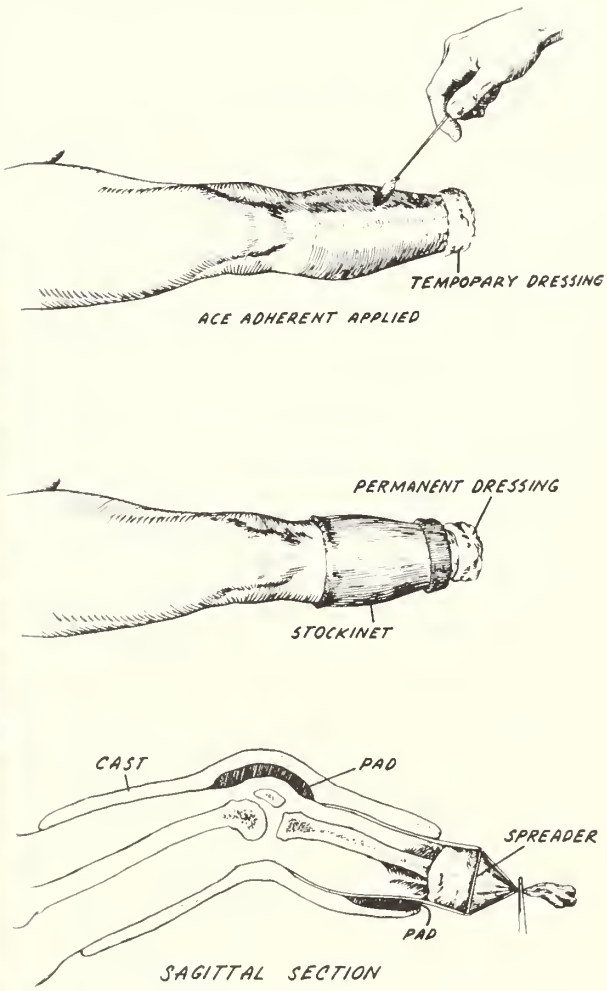


Fig. 16. Application of skin traction for amputation of the leg. (From Hampton: Wounds of the Extremities in Military Surgery, C. V. Mosby Co. 1951.)

(3) Open drainage of the stump minimizes the risk of invasive infection particularly gas gangrene.

The open circular method, in fact, is so safe and gives such excellent results when followed by adequate skin traction that there must always be valid reasons for not using it in the management of amputations in event of a civilian disaster. In case of doubt, it is always the method to be selected.

A properly performed open circular amputation leaves a slightly concave cross section. The so-called meat cleaver type of stump is not part of this technic. The operation is performed by a step-by-step technic. After a circular incision has been made through the skin at the lowest level possible, the skin is allowed to retract. The fascia is next

incised at the level to which the skin has retracted. The muscle is then severed at the level to which the fascia has retracted. Finally, after the deeper layers of muscle have retracted, the periosteum is cleanly incised at this level and the bone is sawed through, flesh with it. A cuff of periosteum

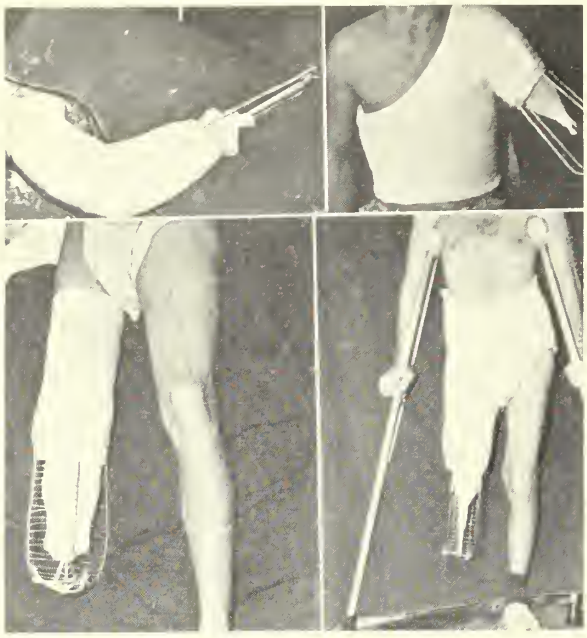


Fig. 17. Skin traction applied in open circular amputations using plaster cast and banjo of steel rod or wire ladder. (From Hampton: Wounds of the Extremities in Military Surgery, C. V. Mosby Co. 1951.)

is not removed as would be done in a closed type of amputation.

The stump is dressed with a fine mesh gauze either dry or impregnated with petrolatum jelly. The dressing is applied with great care so that all raw surfaces are covered but the skin edges are not covered. Provision for skin traction is made immediately by either a stockinet cuff attached to the skin by Ace adherent or by adhesive tape applied directly to the skin (fig. 16). For the best results, the cuff or the tape should not be applied over an area which extends more than six inches above the stump. A spreader about the size of the stump is used. The preferred method of accomplishing traction on the skin is by use of a light plaster cast fitted with a wire ladder or steel rod banjo attachment. The cast always includes the joint just above the amputation (fig. 17). A hipspica for instance must be used for an amputation through the thigh. Failure to include the proximal joint in the cast destroys the effectiveness of the traction. A Thomas splint may be used in place of the cast and banjo but it is less effective and less comfortable. An elastic material such as plasma tubing or elastic cord extending between the stockinet and the banjo attachment provides the traction on the skin.

In the open flap technic, skin traction as described previously is highly desirable. If this is not practicable, then a compression dressing should be applied to the stump and splinting provided. The joint proximal to the level of amputation must be splinted adequately.

SPLINTING AFTER INITIAL WOUND SURGERY

(Transportation Splinting)

Adequate splinting must be provided for extremities with massive soft part wounds or open fractures after initial wound surgery has been completed and also for those with closed fractures. In any discussion of splinting applied at the completion of initial surgery, it must be emphasized that this splinting is applied only for a limited time and only for purposes of transportation. It is not intended to obtain or maintain reduction of the fracture. As was pointed out previously, the definitive reduction of both open and closed fractures should be postponed until the casualties have reached a fixed hospital where facilities are optimal and they may be held sufficiently long for the necessary treatment.

There are several reasons why the delayed definitive reduction of fractures must be accepted:



Fig. 18. His spica applied for transportation splinting of compound fracture of femur. Cast has been split along the outer side. Note that the knee spread is held to a minimum so that the cast fits within the bars of the litter. Note also data on the cast including the highly informative diagram of the injury. (From Hampton: Wounds of the Extremities in Military Surgery, C. V. Mosby Co. 1951.)

(1) Circumstances of disaster surgery in an emergency hospital do not justify any real effort at precise reduction of fractures. The time of the entire surgical team must not be consumed in procedures which can be just as well if not better

carried out later at a hospital farther removed from the disaster area.

(2) The facilities in an emergency hospital operating room in which debridement may often be performed with the injured man lying on a litter are not conducive to accurate reduction.

(3) Fluoroscopic and roentgenologic controls are not feasible, particularly under the pressure of a heavy casualty load.

(4) Under these circumstances, precise reduction of the fracture probably would not be obtained but, if it were, it probably could not be maintained during the application of splints or a plaster cast. Moreover, all casts must necessarily be split or bivalved as an essential precaution against circulatory impairment during transportation.

The objectives of transportation splinting following initial wound surgery then are to secure gross normal alignment of the injured extremity, to immobilize the adjacent joints in the position of function and to provide a splint which will immobilize the injured extremity adequately without causing pain by pressure on bony prominences or nerve or circulatory damage. If these objectives are achieved the patient will travel safely and comfortably to a fixed hospital where definitive reduction of the fracture may be accomplished.

The ideal transportation splint is a well padded plaster cast. The advantages of a cast over board and traction splints justify the time and material necessary for their application. They are preferable particularly because of the stability which they possess and the comfort they will give the patients. These are important since several days and perhaps more than a week will elapse before the casts are removed for definitive reduction of the fractures. It will not be necessary that the casts be applied by a physician as well trained plaster technicians can apply them just as well. Skin tight casts should not be used and skeletal fixation by the incorporation of transfixion pins or wires in plaster casts is totally unsuitable for transportation splinting purposes.

All circular plaster casts must be split or bivalved in the operating room of an emergency hospital before the patient is sent to a ward. The underlying sheet wadding as well as the plaster must be cut since blood soaked wadding which shrinks and constricts as it dries can cause as much circulatory embarrassment as the plaster itself. It is far better to split the cast immediately after its application that to anticipate splitting it some time later in the ward. The operating surgeon may be so busy in the operating room that he will neglect delayed splitting or bivalving. The plaster casts are made relatively heavy and thick to prevent their breaking after they have been split and, as an additional precaution, muslin bandages are wrapped snugly about them to protect their integrity.

Diagrams on the casts showing the location and general contour of the fracture or fractures (fig. 18) and the wound or wounds together with the extent of skin loss will furnish invalubale information to those who will assume the care of the casualty in a base hospital.

While plaster cast immobilization will provide the best splinting after initial wound surgery and

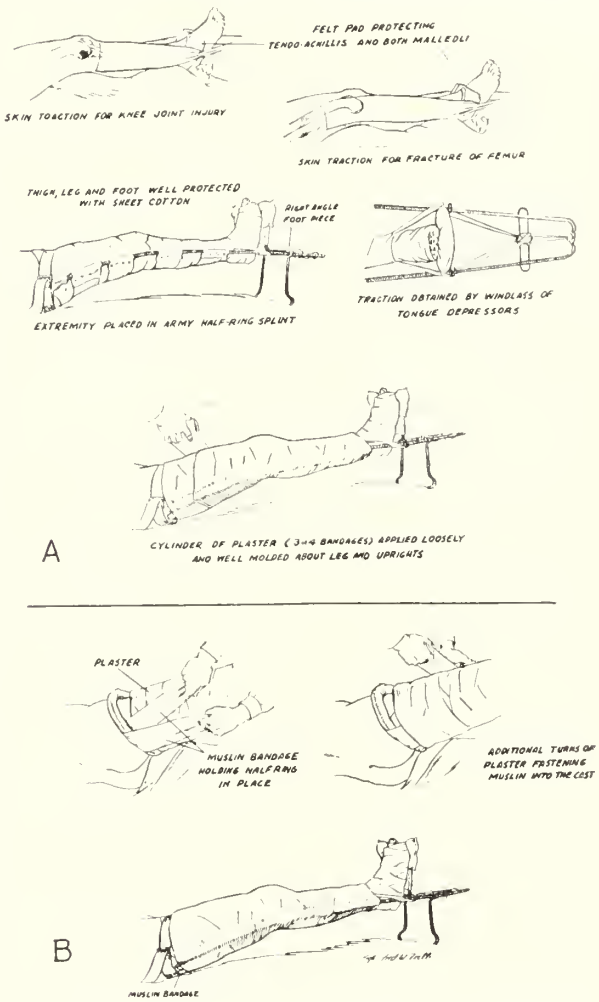


Fig. 19. Application of a modified Tobruk splint using a half-ring leg splint. A. Application of the adhesive tape skin traction, sheet cotton and plaster. B. Stabilization of the half-ring by a loop of muslin bandage incorporated in the plaster. The steps shown in "b" are not necessary if a full-ring Thomas splint is used. (From Hampton: Wounds of the Extremities in Military Surgery, C. V. Mosby Co. 1951.)

while it appears feasible to furnish plaster supplies and equipment in emergency hospitals for this purpose, it is possible, of course, that it will not always be available and other forms of splinting must be used. In these instances, the methods described under emergency splinting previously, will necessarily be used for transportation splinting. If, however, it becomes necessary to evacuate casualties with fractures of the lower extremity in a Thomas or half-ring leg splint, the traction hitch should not be used. Adhesive tape skin traction with the malleoli well padded should be substituted.

The recommendations to follow will serve as a guide for the type of cast which should be used for transportation splinting for injuries of the extremities after initial wound surgery.

Thigh and Hip.—A hip spica (fig. 18) provides a most satisfactory transportation splinting for wounds involving the hip joints, massive soft part wounds of the thigh and fractures of the

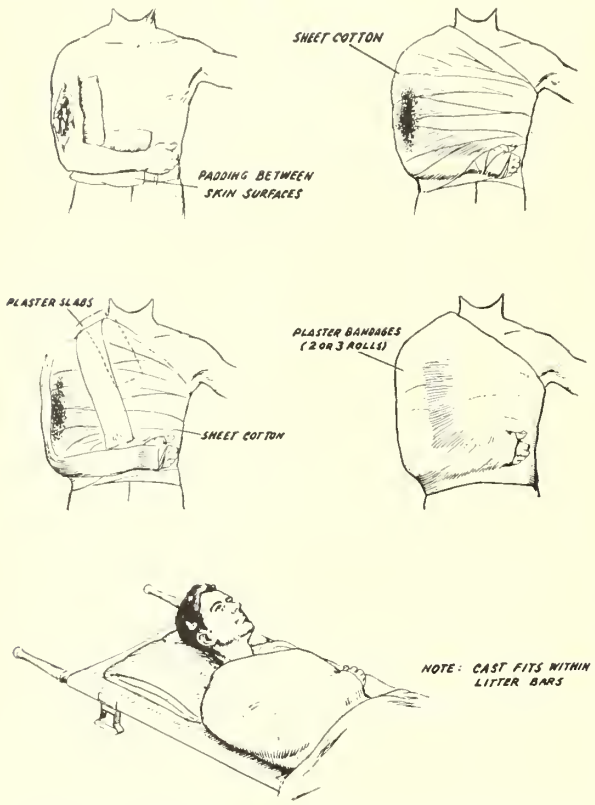


Fig. 20. Plaster Velpeau bandage for injuries of the shoulder joint, arm or elbow. (From Hampton: Wounds of the Extremities in Military Surgery, C. V. Mosby Co. 1951.)

femur. On the uninjured side, the cast extends to the knee. The spica extends upward only to the costal margin and it is trimmed low in front so that the casualty may sit semi-erect. Knee spread is held to a minimum to keep the feet within the bars of a cot or litter on which he is to be transported. It is necessary to split only the leg portion of a hip spica on the outer aspect of the cast. An anterior cross-stick is incorporated in the cast for stability.

The modified Tobruk splint provides an adequate substitute for a hip spica for wounds about the knee joint and fractures of the lower third of the femur or upper end of the bones of the leg. The Tobruk splint is in effect a Thomas or half-ring leg splint properly applied with fixed adhesive skin traction to which is added a cylinder of plaster extending from the upper thigh to just above the ankle and incorporating the extremity and uprights of the splint. The details of application are adequately shown in figure 19.

In preparing himself for the management of mass casualties in event of a civilian disaster, every surgeon should learn the details of the Tobruk splint. It is easier and faster to apply than a hip spica. Much less sheet wadding and plaster are necessary. As stated previously, in selected injuries of the lower portion of the thigh and knee, it is an entirely adequate means of transportation splinting and it must be used when a fracture of the femur at any level is associated with a large bowel injury for which a colostomy is necessary.

Foot, Ankle Joint and Leg.—In injuries which involve only the bones of the foot, the plaster cast need extend only to the knee. For those involving the bones of the leg including injuries about the ankle, the splint must extend to just below the groin. The knee is immobilized in about 15 degrees of flexion and the foot is held at a right angle and in neutral version. Failure to provide this amount of flexion at the knee increases the difficulty of obtaining fixation of the foot at the proper angle. Fixation of the foot in plantar flexion in turn handicaps definitive reduction of the fractures in the base hospital.

Arm and Shoulder Joint.—Satisfactory transportation splinting for these injuries can be achieved by either a plaster Velpeau or a shoulder spica. The hanging cast although it is excellent for definitive management of fractures of the humerus later should not be used for transportation splinting. The plaster Velpeau, the details of application of which are shown in figure 20 is by far the most satisfactory type of splinting. It is easily applied and easily removed. It provides maximum comfort. It fits within the bars of a litter, an important point in comfortable transportation. While the shoulder spica also provides comfortable transportation for these injuries, it is less desirable than the Velpeau for a number of reasons. It is more difficult to apply because the positioning of the patient is more difficult. More plaster is needed for its application. The portion covering the upper extremity must be split. The cast is more difficult to remove later for definitive management of the fracture. Finally, a shoulder spica may not fit within the bars of a litter or cot.

Forearm and Elbow Joint.—The ideal transportation splint for these injuries is a plaster cast extending from the upper arm to the proximal palmar crease of the hand. The elbow is held at 90 degrees, the forearm in mid-pronation and the wrist is slight cock-up. A sling for support of the forearm will provide additional immobilization and contribute to the patient's comfort.

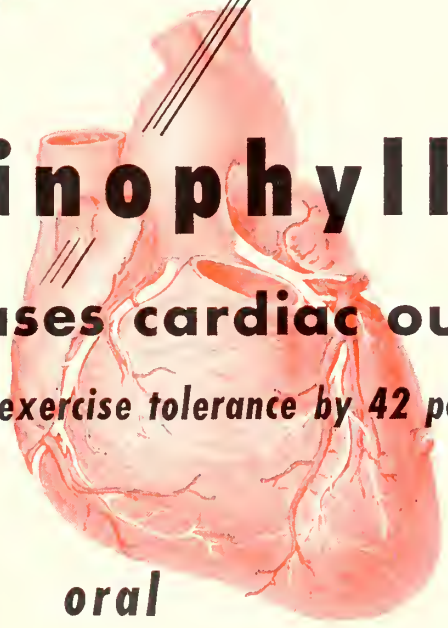
Hand.—Severe hand injuries should be immobilized in the position of function. This can be obtained by means of a plaster cast but an anterior board splint with a pad arranged in the palm so as to support the wrist in dorsal flexion and the fingers in the position of function is preferable. This is the exception to the rule that a plaster cast provides the best transportation splinting.

SEARLE

Aminophyllin*

increases cardiac output

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1. Kissin, M.; Stein, J. J., and Adelmon, R. J.: Angiology 2:217 (June) 1951.
2. Rickles, J. A. J. Florido M.A. 38:263 (Oct.) 1951.

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Application of the dressing and splinting so as to provide sufficient pressure to the entire hand to minimize edema is highly desirable.

SUMMARY

The surgical therapy of casualties with major open wounds, blast and crush injuries in a civilian disaster is an adaptation of the science of surgery to a specialized situation. There need be no compromise with basic surgical principles but the choice of surgical procedures and technics must be governed by the timing and facilities, equipment and level of surgical proficiency which are available. The prime objectives of surgical therapy are to save life and limb. These objectives call for surgical planning under the concept of the greatest good for the greatest number which, in turn, calls for staged surgery probably in several hospitals.

3720 Washington Boulevard.

FLUID THERAPY IN BURNS

FRANCIS X. PALETTA, M.D.
ST. LOUIS

FLUID THERAPY necessarily must involve an understanding of its indications, its correct institution and an awareness of the possible unfavorable[1, 2, 3] consequences of its employment.

The most urgent reason for giving fluid is shock. The cause of peripheral circulatory collapse is a reduction of the circulating blood volume. This is brought about by (1) loss of fluid from the blood stream into the burned area due to edema quantitatively demonstrated by Blalock[4] in experimental animals, (2) stasis of much of the remaining blood volume in a dilated peripheral bed. Any degree of shock may be present, depending on the extent and severity of the burn. In severe burns involving 20 per cent or more of the body surface seen early (within a few minutes or an hour) the absence of shock is not conclusive. It must be considered incipient and inevitable if preventive measures are not taken.



F. X. PALETTA

Abberations in blood chemistry[5] values are another important manifestation of the necessity for fluid administration. Rising nonprotein nitrogen or urea nitrogen is a reflection of decreasing kidney function and makes fluid administration imperative. A profound disturbance of electrolyte balance in the severly burned patient develops gradually during the first forty-eight hours, principally relating to the sodium, Cl and HCO_3. Experimental work cited by Harkins[6] has shown that in mice burned uniformly over the entire body surface excepting the head and neck as much as one-half of the total body sodium was rendered physiologically unavailable. This developed through the escape of a large part of the body's extracellular sodium into the cells of the involved tissue and the localized extracellular collection of fluid in the same region. Although reference to a corresponding decrease in chlorides is less often seen, it does occur and is equally striking. An acidosis accompanies this lowering of the sodium and chloride levels which may be shown by determination of CO_2 combining power. This may be of sufficient extent to contribute materially to the patient's poor clinical condition.

Because of the local loss of plasma, a marked drop in circulating protein occurs in the burned individual in whom appropriate replacement therapy has not been used. In patients treated without plasma or blood infusions, Fox[7] observed decreases averaging more than 2 grams per 100 cc., reaching the minimum values after about forty-eight hours as do the electrolyte levels mentioned. Increased catabolism of protein appears also to contribute to this falling level, as the alpha-amino nitrogen[8] level was found to rise in the majority of a series of patients studied.

The extent and significance of anemia occurring following extensive burns has more recently begun to be appreciated. Confusion over differentiation between a true reduction in the red cell mass and a so called "false anemia" due to dilution of the existing red cell mass in the compensatory hydremia seen following fluid therapy was present for a long time because of the lack of accurate means of determining blood volume. This has been clarified by Moore[9] and others using radioactive tagged red cells to measure the circulating erythrocyte mass in burned patients. They conclude that true anemia is found only in patients with full thickness burns. The anemia is attributed to early hemolysis and cell fragility, blood loss through an open wound, infection with its local trapping of red cells, and disordered iron metabolism and depressed marrow function. The anemia is "stubborn and disabling" and appears quickly, mass hemolysis and hemoglobinuria appearing in the first few hours following the injury. False anemia may appear after second degree burns but true anemia does not.

For years intravenous plasma has been the treatment of choice in burn shock. The rationale of such therapy was established by Blalock in 1931 when he demonstrated that sufficient plasma could be lost at the burn site to cause shock and death. Adoption of this treatment has been universal. The indication for plasma is shock, present or incipient, or, in effect, any serious burn involving more than 10 per cent of the body surface. It is ideally given as a preventive. To quote Harkins[6]: "Ideal treatment of plasma transfusions comprises the commencement of fluid therapy at an early stage when little change has occurred, and the maintenance of a circulating blood volume as nearly unchanged as possible. . . . Since burn shock develops within

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a matter of minutes or at the most, hours, treatment should be begun without delay."

Solutions of electrolytes are indicated in the correction of deranged blood chemistry values for sodium, chloride and CO_2. While this is the oldest type of fluid therapy, only lately has appreciation of the disturbed physiology put it on a rational basis. The ions which must be supplied are sodium, chloride and bicarbonate. The National Research Council[10] has suggested that the solution used be a mixture of two parts 1/6 molar (0.9 per cent) sodium chloride and one part 1/6 molar (1.3 per cent) sodium bicarbonate. If sodium bicarbonate solution is not available, 1/6 molar sodium lactate may be used in its place.

Dosage recommended by the Council is 2,000 cc. of the solution every day in burns involving 10 per cent or less of the body surface. In more extensive burns it recommends from 3,000 to 8,000 cc. the first day and 3,000 cc. the second day. In especially severe acidosis more concentrated bicarbonate solutions may be given. This should be commenced immediately, and the urinary output used as a guide to its adequacy. An output of 100 cc. every hour for the first forty-eight hours is ideal.

The recommended route for electrolyte solutions is by mouth. The danger of introducing these large amounts directly into the circulation is not great in those in need of fluid even though they be cardiac patients, providing the rate is carefully controlled. The intravenous route may be employed in those patients in whom the oral route is impossible or unwise (patients with airway burns and abdominal injuries).

The latest feature in the fluid therapy of burns is a revival of interest in blood transfusions. Although the empirical observation that burned patients tend to do better when transfused early was made by many people a long time ago, theoretical objections had until recently been raised to such treatment. The principal cause for not adopting transfusion sooner was the fear of furthering already present hemoconcentration. This condition was thought to be deleterious in itself. Since this has been proven untrue, a great deal of work has been done on the effect of transfusion in reducing the mortality of severe burns. This work is summarized by Harkins[6] who emphasizes that "Whole blood therapy eliminates early masked anemia (high hematocrit) and prevents secondary anemia which, once established is very difficult to overcome. Whole blood therapy," he continues, "also prevents hypoproteinemia and is accompanied by good urinary output." It appears incontrovertible that patients whose treatment includes the liberal use of whole blood transfusions are thereby enabled to recover from burns which would probably otherwise prove fatal. McDonald[11] has pointed out that blood is the best source of protein as well as the only means by which anemia can be combatted. He emphasizes the beneficial effect on wound healing in the post shock period.

The tendency at present is to favor whole blood transfusion with oral electrolyte solutions as the most efficacious fluid treatment for burns.[14, 15, 16, 17] Either plasma or blood is effective in overcoming the initial shock, and the availability of the former recommends its use along with blood. However, the more nearly blood is used to the exclusion of plasma, the more favorable will be the post shock period. Electrolyte solutions, preferably by mouth, must of course also be employed as explained previously. The amounts of these fluids must be judged on the basis of laboratory reports and the clinical condition of the patient.

Fluid therapy in burns should be directed toward two major objectives: (1) rapid replacement of acute deficits and (2) maintenance of daily needs. The following is recommended treatment in the various echelons comparable to the management used in the European war; namely, First Aid Station, Collecting Company, Clearing Station and Emergency Hospital.

FIRST AID STATION

Burns are to be inspected and the patient given a temporary classification of minor or severe burn. The opening or removal of clothing is only done if necessary for inspection. They will be classified into three classes. Class 1 will be the walking minor burn cases that can be inspected, given reassurance and advised to be treated as an ambulatory patient. Class 2 would be moderate burns needing fluid therapy and skin grafting (less than 20 per cent body surface burned) sent to Collecting Station for transfer to remote hospital, since their care does not need immediate attention as does Class 3. Class 3 would be severe burns sent to Clearing Station directly if possible for exact classification and beginning intensive fluid therapy.

If the patient can take fluids by mouth he will be given as much as is tolerated (water, coffee, tea or sodium chloride, sodium bicarbonate or sodium citrate solution). However, those complaining of abdominal pain should be restricted until seen by a physician. Moyer[12] has demonstrated clearly that "water intoxication" may account for many of the symptoms ascribed to the burn such as vomiting, headache, delirium and convulsions. It is preferable to use bicarbonate-saline solution orally and large amounts could easily be made available (4 gm. of sodium chloride and 1.5 gms. of sodium bicarbonate per liter of distilled water).

COLLECTING STATION

Patients with burns of 20 per cent or less body surface involvement are those having burns of an entire extremity, or one side of the chest and the abdomen or just the back that would need grafting would fall in this group. This group would be given oral fluids and if blood plasma is available as well as personnel to give it, 500 cc. are given while the patient awaits transportation to some remote hospital. These cases can be transferred to distant hospitals since early treatment is not quite

as urgent as in the more severely burned patients. The more severely burned patients would be priority cases to be sent to the Clearing Station. They are given oral fluids and blood or plasma if available. Minor burns could be given definitive treatment, oral fluids and discharged.

CLEARING STATION

Burn patients should be examined and classified in regard to extent and severity of the burns. A simple means to determine the percentage of body surface burned is the "Rule of 9" as exemplified in figure 1. It is relatively accurate for practical purposes when compared with Berkow's charts.

The estimate is placed on the emergency tag pinned on the patient and a chart started recording total fluid intake and output. Patients with from 20 to 40 per cent third degree burns should be sent directly to an emergency hospital close by attached to the Clearing Station. These are the patients that will demand attention, and can be saved. They will need debridement and skin grafting and if placed where the treatment is to be given will minimize transportation.

The cases having more than 40 per cent body surface burn are to be sent to Special Emergency Hospital for this group. Regardless of the type of treatment administered, the mortality in this group is exceedingly high. Depending on the availability of blood and plasma, they should not be wasted on this group if it is scarce. It should be used where it can do the most good and that is in the group of cases falling into 20 to 40 per cent involvement.

Transfusion or plasma infusion, or plasma substitute, are given and accurately recorded on the emergency tag. Since facilities for laboratory work will probably not be available, the patient's condition is evaluated on the basis of clinical appearance, pulse and urinary volume.

FLUID THERAPY IN HOSPITAL

Severe burn patients (patients with from 20 to 40 per cent burn surface) should be catheterized, preferably with an indwelling catheter. An accurate record of the urinary output should be kept on their chart. If available attendants are present, the urinary output should be recorded hourly. Most men agree that the simplest index of the state of balance between needs and therapy is the hour to hour recording of renal output.

A plan for intravenous fluids administration for adults in the Emergency Hospital is as follows:

A. For the First Twenty-Four Hours:

1. Give 1 to 2 liters of blood, plasma or plasma substitute during the first twelve hours, and regulate according to degree of shock present.
2. Follow by 2 liters of electrolyte solution.
   (a) 2 parts isotonic saline .9 per cent.
   1 part isotonic sodium bicarbonate 1.3 per cent.
   or
   (b) Isotonic solution of sodium chloride or
   (c) 1 6 molar lactate solution.
3. Followed by 2 liters of 5 per cent dextrose in water.
4. Orally:
   (a) Bicarbonate saline solution with fruit juices
   4 gms. of sodium chloride
   1.5 gms. of sodium bicarbonate
   in 1 liter of distilled water
   Total 6,000 to 8,000 cc. during first twenty-four hours.

Adequacy of therapy is guided by hourly urinary output and if possible by serial determination of hematocrit, red cell count or hemoglobin (Copper Sulphate Falling drop test).

It is not advisable to give more than 8,000 cc. of fluid during the first twenty-four hours regardless of the extent of the burn, or is it wise to give more than 4,000 cc. of plasma or plasma substitute during the same length of time.

Twelve hours after beginning fluid therapy, reevaluation of the patient's general condition should be made. If the urinary flow is from 50 to 100 cc. per hour, the rate of fluid administration may be considered adequate. If the urinary output is more than 150 cc. per hour for more than three hours continuously, too much fluid is being given and the fluid should be cut in half. A urinary output of less than 15 cc. per hour for three consecutive hours probably indicates that inadequate fluid is being given, or there is threatening renal failure. If the diminution of urine flow results directly from inadequate fluid therapy, a significant increase in urine output should be produced by an infusion of 1,000 cc. of plasma or plasma substitute.

FLUID THERAPY IN CHILDREN

Fluids in children are administered according to body weight. The scale recommended to calculate total amount to be administered is 10 cc. per pound of body weight. The average weight for children, according to Watson and Lowry, are as follow:

3 months,	12 lbs.
6 months,	16 lbs.
1 year,	22 lbs.
2 years,	27 lbs.
3 years,	32 lbs.
4 years,	36 lbs.
5 years,	40 lbs.
10 years,	71 lbs.
15 years,	108 lbs.

In order to simplify the calculation, the following amounts of blood, plasma or plasma substitute should be given to the children in the first twelve hours falling into the following age groups:

3 months, 10 lbs. give 100 cc.

6 months,	15 lbs.	give 150 cc.
1 year,	20 lbs.	give 200 cc.
2- 4 years,	27- 40 lbs.	give 250-400 cc.
5-10 years,	50- 75 lbs.	give 500 cc.
10-15 years,	75-115 lbs.	give 1,000 cc.

The biggest variance would be in children from 1 month to 1 year of age. Overhydration should be watched for in this early age group. A No. 18 polyethylene tubing inserted into a vein with a No. 18 gauge needle is recommended. This can be left in for the length of time necessary to give intravenous fluids.

B. For the Second Twenty-Four Hours:

Evaluation of the general situation should again be made. If the urinary output is adequate and (hematocrit, red blood and hemoglobin) do not indicate hemoconcentration, half of the amount of fluid required in the first twenty-four hours is usually adequate to maintain the patient in good balance. The appearance of hemoglobin in the urine should be watched for and usually indicates poor prognosis because of the possible development of lower nephron nephrosis with renal failure.

C. Third Day:

Spontaneous diuresis should be watched for. Patients usually begin to ask for food and fluid by mouth. The amount of fluid needed to maintain good urinary output is sharply decreased. Intravenous and oral salt therapy may not be required.

D. Fourth Day:

If laboratory facilities are available to determine hematocrit, blood urea and other clinical studies, it will be useful in evaluating efficacy treatment. If the patient is stabilized, the catheter can be removed. Patients can then be given 500 cc. blood daily or every other day to prevent intractable anemia.

TUBE FEEDING

Since it is important to combat negative nitrogen balance in burn patients, supplemental tube feeding is helpful. Levenson[8] and associates have shown that the increased demand for protein is directly related to the extent of the third degree burn. Blocker[13] has force fed his patients after the second day by means of a constant drip into the stomach through a small intranasal flexible plastic tube. The tubing can be left in place indefinitely without signs of irritation and is well tolerated by the patient. Recently they have devised a pump which delivers the protein mixture at a constant rate, overcoming the tendency for the tube to become clogged. A whole protein mixture containing milk, eggs, dextrose and protolysate supplies per liter 150 gm. of protein, 346 gm. of carbohydrate and 57 gm. of fat. The caliber of the tubing is that of an 18 gauge needle. Vitamins and iron can be added to the mixture.

LIMITATIONS TO PARENTERAL FLUID THERAPY

1. *Renal Failure.*—If oliguria develops, care must be exercised in giving additional fluids. Since the fluids are not being excreted, forcing fluids will result in pulmonary edema and death. In the presence of renal failure, salt is restricted and fluid given only to replace insensible loss through lungs and skin (1,500 cc.).

DO NOT DROWN PATIENT

2. *Airway Burns and Intrathoracic Injuries.*—The hazard of pulmonary edema[18] is greatly increased in these patients due to lower respiratory drainage and decreased oxygenation. Special care should be taken to avoid excessive administration of fluids.

634 N. Grand Ave.

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FLUID THERAPY IN BURNS

FIRST AID STATION

1. Classify — Minor burn; Severe burn (Priority tag case)
2. Give Oral Fluids — Water; Tea; Coffee; Electrolyte Solution
   4 gms. Sod. Chloride
   1.5 Sod. Bicarbonate
   1 liter water
3. CAUTION—IF ABDOMINAL PAIN IS PRESENT RESTRICT FLUID UNTIL SEEN BY M.D.

COLLECTING STATION

1. Continue Oral Fluids
2. Less 20% body burn, can wait transportation to remote hospital
3. Severe burned—Priority cases to be transported to Clearing Station

CLEARING STATION

1. Classify cases into (a) 20-40% burns
   (b) over 40% burns
2. Start blood, plasma or plasma substitute
3. Priority cases 20-40% burns sent to near by emergency hospital
4. Over 40% Surface burns sent to designated hospital

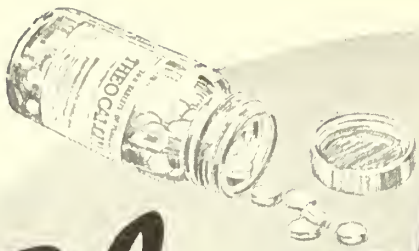
EMERGENCY HOSPITAL

20-40% BURN CASES

1. *CATHETERIZE* (Indwelling Catheter)
2. CHART INTAKE AND OUTPUT HOURLY IF POSSIBLE
3. INTRAVENOUS FLUIDS TO BE GIVEN IN FIRST 24 HRS.
   (a) 1-2 liter blood, plasma or plasma sub.
   (b) 1-2 liters electrolyte solution
   (1) 2 parts (Isotonic Saline .9%)
   1 part (Isotonic Sod. Bicarb. 1.3%)
   or
   (2) Isotonic Solution Sod. Chloride
   or
   (3) 1/6 Molar Lactate Solution
   (c) 2 Liters 5% Glucose in water
   (d) Oral Fluids
   Bicarbonate-Saline Solution with Fruit Juices
   TOTAL FLUIDS 6,000-8,000 cc. in 24 hours.
4. Re-evaluate Patient in 12 hours.
   (a) Clinical Appearance
   (b) Temperature
   (c) Pulse
   (d) Urinary Volume
   (e) Lab. Work if Available
   Copper Sulphate (Falling Drop)
   RBC and Hematocrit
5. TUBE FEEDING
   Polyethylene Tubing
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DETERMINE ADEQUACY FLUIDS.....BY GOOD URINARY OUTPUT—50-100 cc. per hour
DO NOT GIVE OVER.....8,000 cc. FLUIDS IN 24 HOURS.
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FLUIDS IN CHILDREN

GIVE BLOOD, PLASMA OR PLASMA SUBSTITUTE

1. LESS 1 YR. AGE.—150-200 cc.
2. 2- 4 YRS.—250-400 cc.
3. 5-10 YRS.—500 cc.
4. 10-15 YRS.—1,000 cc.

DO NOT OVER HYDRATE CHILDREN
BIGGEST VARIANCE 1 MONTH TO 1 YEAR
USE NO. 18 POLYETHYLENE TUBING IN VEIN
WITH NO. 18 GAUGE NEEDLE

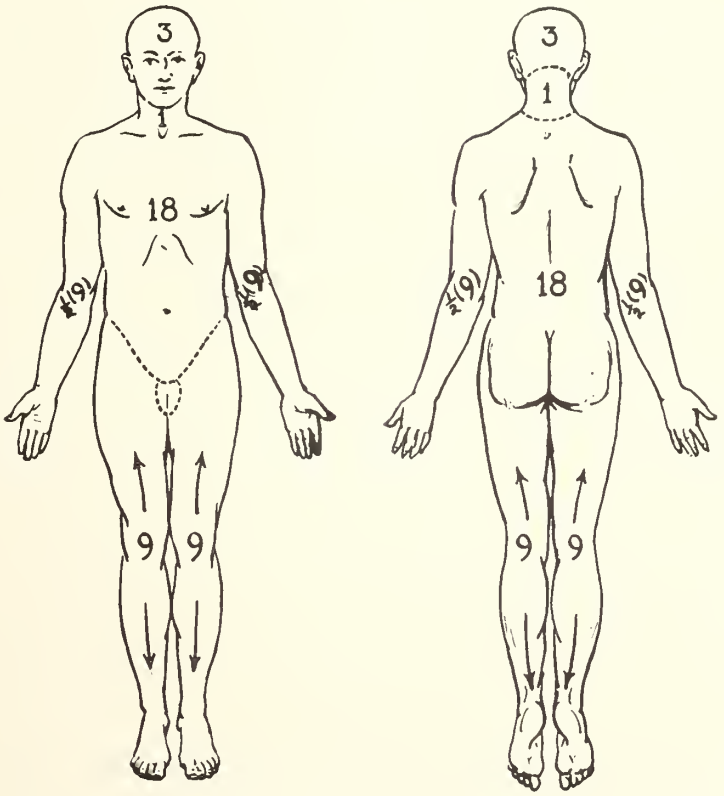
CAUTION →

DO NOT DROWN PATIENT

1. OBSERVE FOR SIGNS OF RENAL FAILURE
   A. IF OLIGURIA PRESENT, 15 cc. OUTPUT FOR 3 HRS. OR MORE—GIVE 1,000 cc. PLASMA
   B. IF ANURIA PRESENT—LIMIT FLUIDS To 1,500 cc. for 24 hours. (Insensible loss)

OVER HYDRATION IN RENAL FAILURE RESULTS —PULMONARY EDEMA AND DEATH

2. AIRWAY BURNS AND INTRATHORACIC INJURIES
   A. HAZARD PULMONARY EDEMA INCREASED
   B. DO NOT OVER HYDRATE





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ANALGESIA, AIRWAY MANAGEMENT AND ANESTHESIA FOR MASS CASUALTIES

DOUGLAS W. EASTWOOD, M.D.
ST. LOUIS

ANALGESIA

When a major catastrophy occurs, the relief of pain is an immediate necessity for a major portion of those injured, and requires prior thought and planning to accomplish the humane purpose without increasing the number of deaths. Analgesia is best accomplished by means of morphine type drugs including those illustrated in table 1. An exact dosage scale cannot be offered since this depends on many factors. Unlike military casualties in which the age and previous physical condition of the patients are approximately equivalent, civilian casualties are from all age groups.



D. W. EASTWOOD

Since many of these patients will be suffering from shock and exposure, hypodermic administration will often result in no effect, as has been shown.[1, 2] The constricted capillary bed at the site of the injection prevents the absorption of the drug. At the time the shock is relieved by intravenous administration of blood or blood substitutes, the analgesic drug is absorbed and the latent depression occurs.

The administration of these drugs should be permitted by those having previous training in evaluation of the patients, with stress applied to the following points:

1. *Administration only for the relief of pain.*—A wound may not be painful because of the depression of nerve conduction due to trauma, or to the shock state of the patient. A patient in shock is not benefited as far as the shock is concerned by the administration of an analgesic unless pain is present. Morphine is contraindicated when restlessness or anxiety are present. Barbiturates may be given for anxiety provided anoxia or shock are not the cause of the anxiety. The presence of a wound of the head, face or chest necessitates care in the administration of analgesics since respiratory depression may accompany its administration. The respiratory embarrassment of the wound combined with that of the analgesia may be sufficient to produce a fatality.

2. *Selection of a dose adequate to relieve the pain without undue depression of respiration and circulation.*—Morphine may be given to relieve pain in the extremes of age if the dosage is reduced sharply below the age of 10 and above the age of 60. The administration of from 5 to 8 mg. of morphine between the ages of 5 to 10 years and 60 to 75 years may be considered safe average doses.[3]

Chronic illnesses, shock and hypometabolic states reduce the amount of morphine needed, while severe pain, as encountered in abdominal wounds,[2] may necessitate repeated or larger doses.

3. *Intravenous Administration.*—Administer the drug intravenously, where practical, in small doses until pain relief occurs, especially to patients in shock in whom the drug will not be absorbed from the subcutaneous area. Intramuscular injections may be more helpful than subcutaneous injections since a more rapid onset of action will occur. Though oral administration is irregular in its action and is usually delayed, since the action of the stomach is slowed or stopped following trauma, in conditions where syringes are not available, a hypo tablet may be absorbed by placing it under the tongue.

Table 1. *Drugs.*

Drug	*Equivalent dose*	*Duration of Action*
Morphine	10 mg. (1/6 gr.)	3-4 hours
Pantopon	20 mg. (1/3 gr.)	3-4 hours
Demerol	100 mg.	1-2 hours
Methadon	5 mg.	3-4 hours
Dromoran	2.5 mg.	4 hours plus
Dilaudid	0.75 mg. (1/48 gr.)	3-4 hours

4. *Records.*—Record carefully time, dose and drug used on identification tag since the patient will likely be evacuated and will not be under the care of those administering the drug.

5. *Personnel to administer drugs.*—The persons selected for administration of these drugs should be made where possible from professional groups such as physicians, pharmacists and registered nurses. This group can be expanded when necessary to include those who have had some medical training such as practical nurses, former medical corpsmen, police and fire rescue squads.

AIRWAY MANAGEMENT

Management of the airway in casualties having injury to the upper airway or who are in a comatose condition must be made an important portion of the training of those handling casualites. The following sections should be taught:

A. Diagnosis of airway obstruction:

1. Listen for movement of air past the lips.

2. Snoring, wheezing or bubbling respirations indicate obstruction which should be alleviated.

3. Excessive respiratory activities indicate obstruction or oxygen want.

4. Signs of oxygen want: (a) tachycardia, (b) anxiety, restlessness, delirium, (c) air hunger; late: (a) bradycardia, (b) cyanosis, (c) convulsions.

B. Treatment of airway obstruction:

1. Position:

(a) Lateral where possible. The "post-tonsillectomy position" should be used in circumstances in which the patients are comatose or show airway obstruction. Exceptions are those with frac-

tures preventing it, and airway or lung injuries in which the seated position permits better respiratory exchange.

(b) Prone position permits drainage of blood or other foreign material from the mouth. The tongue falls forward and is less apt to obstruct the oropharynx.

(c) Supine position only if mandatory for other injuries. The tongue must be elevated from the pharyngeal wall by turning the head to one side, extending the head or pulling the tongue forward.

2. Removal of foreign material from mouth by wiping it out or use of suction, if available.

3. Insertion of mechanical airways. The use of oropharyngeal airways, endotracheal tubes and tracheotomy must be limited to trained professional personnel.

C. Management of artificial ventilation:

1. Manual methods of artificial ventilation will be the most useful in the field, and the technics, as described in an article on "Manual Artificial Respiration: Comparison of Effectiveness of Various Methods in Apneic Normal Adults,[9] should be taught.

ANESTHESIA

Anesthesia for casualties outside of hospital facilities should be discouraged except in most emergent circumstances. It should be limited to the use of local infiltration or regional nerve block.

In cases in which the anesthetic is to be given by a competently trained individual the agents and technics should be left to his discretion. This will depend upon the equipment available. When the need for anesthesia exceeds the supply of trained personnel, regional block by the surgeon is the safest method. When general anesthesia is needed, ether administered by open drop is the method of choice. This technic offers the widest margin of safety in the hands of the inexperienced. The danger of explosion is small unless oxygen is administered with it, though fire hazard is still present. Minimal equipment available in circumstances following mass casualties can more safely result in adequate anesthesia than when other technics or agents are used.

The use of intravenous barbiturates for hypnosis is to be condemned under these conditions. Though equipment for administration of the drug is minimal, the danger from respiratory obstruction, respiratory arrest, prolonged narcosis and depression of circulation, which cannot be managed without elaborate equipment, are dangers which have proved the method unsuited.[4, 5, 6] Spinal anesthesia is suitable only where careful cleanliness and sterility can be obtained.

Choice of anesthetic agents on the basis of the condition of the patient can be made only to the extent of deciding if local anesthesia will suffice. If not, ether will be the only choice available, though other agents and technics may produce less harmful effects in patients in shock.

SUMMARY

1. Analgesia for mass casualties can be obtained by administration of morphine type drugs, preferably intravenously or intramuscularly. Those selected for administration of these drugs should be trained to use them only to relieve pain, in doses scaled down to suit the age and physical condition of the casualty, and to make adequate record of the dose.

2. Airway maintenance should be taught to emergency teams as well as adequate methods of artificial resuscitation.

3. Anesthesia should be limited to adequately equipped locations where possible, with local or regional nerve block and open drop ether technics used where unskilled personnel or inadequate equipment is a limiting factor.

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THE EARLY TRIAGE OF CASUALTIES

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DUE TO THE FACT that the word "triage" has caused a large amount of comment, it is felt that the word perhaps should be defined before going on with this discussion. "Triage" is a French word which, literally translated, means "pull out or separate." This word was taken from the French by the British and American armies and applied to the duties of a medical officer responsible for the separation of the casualties as they arrived from the front at the forward collecto-clearing stations. Thus, the name "triage officer."



R. R. COFFEY

It is the duty of this officer to determine rapidly the extent of the wounds and make judgments as to whether or not the casualty is a transportable or nontransportable case.



J. A. GROWDON

From these statements, it is seen that the triage officer is probably one of the most important men in the line of evacuation. Not only must he be qualified from the medical and surgical standpoint in observation and diagnostic ability, but he must be able to evaluate such factors as type of wound, shock and ability of the casualty to undergo further transportation.

As an illustration, one has only to remember the setting up of a surgical hospital where there are hundreds of casualties awaiting even before the hospital has been set up. This in itself creates a bottleneck and the attempt to sort out the seriously wounded from the less seriously wounded is a "must." By this triage then, immediate care may be given to the nontransportable casualties and those who can wait a longer period of time may be shipped to a less busy echelon. Again going back to the original picture of hundreds of casualties awaiting care, it should be the duty of this triage officer to direct the cataloging of the various types of casualties which are tabulated.

I. Types of casualties:

A. *Nontransportables.* Divert to attached surgical teams:

1. Compound fractures requiring stabilization.
2. Abdominal wounds.
3. Thoracic wounds (sucking or tension pneumothorax).
4. Thoraco-abdominal wounds.
5. Cranial wounds (open), to be given coverage, resuscitation and airway and sent to neurologic center as early as possible.
6. Face wounds or fractures necessitating improvement of airway, tongue traction, tracheotomy.

B. *Transportables.* Divert to rear echelon:

1. Stretcher cases for immediate transport.
2. Stretcher cases needing resuscitation.
3. Sitting wounded.
4. Walking wounded.

C. *Hopeless cases:*

To be put aside for clergy and lay care.

Severe burns and cases with severe radiation exposure probably should be diverted at this level to special and separate centers.

There is a question whether cases of hysteria or giving other evidences of nervous instability should not be also segregated and held at this point so that they may not spread panic. Chaplains or other stable lay personnel could take them over providing a sufficient number for this type of duty can be trained.

Thus are accomplished two definite results: first, elimination of the bottleneck of too many casualties for the number of medical men available at a particular station; second, those who cannot be moved due to seriousness of injury are cared for and those who can travel further back where adequate medical care will be available are evacuated.

In civilian defense, as it is set up in the Missouri State Plan, an attempt has been made to integrate various sectors of the large cities into a complete medical and surgical set up.

Lines of evacuation have been established for each sector to care for the casualties of any given bomb explosion or disaster. In anticipation of a probable minimum of at least 60,000 casualties which must be handled with any atomic bomb blast, the tremendous duty for the medical personnel is at once apparent not only in the care but also in the evacuation of these casualties. The great need for adequate lay support of these activities is also apparent. Therefore, every sector must have an emergency or collecto-clearing station arrangement and surgical teams which will be available for definitive immediate surgery for the nontransportable cases. It is at this level of evacuation that the triage officer functions in the segregation of the nontransportable, or those needing immediate care, from those who are less seriously injured and who, therefore, can be evacuated toward the periphery and away from the immediate influx of casualties. The line of evacuation must be kept open and bottlenecks eliminated.

Early competent triage at forward area (collecting station) level can regulate proper evacuation of injured and be a major factor in preventing panic. The personnel, both medical and administrative, must be well trained and of stable temperament and must be backed up by adequate authority so that their directions will be followed implicitly.

Liaison by walkee talkee or courier will be set up between collecting stations and temporary hospitals (initiated by the collecting station) as soon as the collecting station is located so that collecting station personnel will know when hospitals are ready to receive.

In turn, hospitals must keep collecting station commanding officers notified as to their ability to receive more patients or that they are full and in that case must direct him accurately as to the next temporary hospital ready to receive evacuated wounded from his station.

These two measures will prevent, to a major degree, confusion and overcrowding of installations.

There will be some lag in setting up temporary hospitals and so hospital personnel (medical) may be sent forward temporarily to aid collecting stations emergency care and be recalled when their hospital is ready to function.

Evidence of organization by the medical per-

sonnel will aid materially in quieting panic among injured even though immediate definitive care is not possible.

The public should be informed fully of this plan for evacuation of wounded so that their cooperation may be more readily obtained at the time of need.

1103 Grand.

THE SURGICAL TREATMENT OF BURNS

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The treatment of mass casualties resulting from an atomic bomb blast in a large metropolitan area is of such scope that the philosophy of treatment and the technic employed must differ from the best that could be utilized in civilian life under optimal favorable conditions. Burns would constitute the largest number of casualties and would be of three types, due to the effects of: (1) flash from the blast, (2) secondary flame effects from fires caused by the bombing and (3) radiant energy. All three types may be coexistent in many patients along with other injuries of mechanical nature and of all degrees of severity. A unified plan for emergency care is a "must." Widespread education is planned first for doctors and nurses and secondarily for all personnel concerned with the emergency treatment. Education should be directed toward the population as a whole from the standpoint of prevention and from the standpoint of saving lives and lowering morbidity. Conformity of treatment is especially important in the stockpiling of supplies and in the instruction of the people actually giving the treatment.



D. W. ROBINSON

Imagine the worst possible situation. It is noon of a work day in a busy industrial city of somewhere around a million people. An atom bomb has exploded 2,000 feet above the center of the metropolis. The cataclysm was a complete surprise on this summer day during the lunch hour. Aside from the total disruption and massive death in the area directly under the bomb burst from one to two miles from the center of the blast effect, there would be burns of some degree suffered by everyone exposed to the flash in a large peripheral area. Approximately 60,000 burn casualties would be produced, one third being serious burns.

In a civilian hospital, three or four severe burns received at once constitute a maximum effort for many more times that number of personnel to give the best possible treatment over the next two or three days. This is utilizing every bit of the available therapeutic armamentarium in order to salvage these few casualties. It is obvious, when 20,000 critically burned patients and 40,000 others of minor degree are received at once that no such type of treatment is possible. The primary aim is to save the most number of lives possible. It should be recognized by all that heroic and desperate attempts to salvage the most critically injured would be a useless waste of time and personnel when by the same effort a larger total number of patients could be salvaged by attention given those less wounded. The responsibility of individual patient decisions rests solely on the triage officer.

The general condition of the patient is more important than his wounds although care of the wounds cannot be divorced from the general status of the patient. Ideal treatment of shock from the burn would consist of the giving of whole blood and plasma and the giving of suitable buffered electrolytes, preferably in equal amounts to the blood. Such replacement therapy, directed, first toward restoration of the circulating fluid volume and, second, toward reestablishing the balance of the deficient extracellular fluid volume, would be the foremost bottleneck in the plan of treatment. Pain is not much of a problem in the deeply burned patient whose nerve endings have been destroyed. The less severely burned patient would experience varying degrees of pain which could be relieved in part by minor doses of morphine. All personnel should be cautioned against giving a severely injured patient much morphine for fear that respiratory depression may result from its use.

The control of infection may be the most important part of treatment after the initial shock period. Penicillin is perhaps still the most efficient and economical agent that can be used primarily on a large scale. Multiple injections in the aqueous form would be impractical but large single daily injections (600,000 units) of some long acting form would be important treatment. Effort should be made to see that as much of the civilian population as possible has been immunized in advance against tetanus by the use of toxoid. Booster doses of ½ to 1 cc. should then be given. Tetanus antitoxin (3,000 units) would be desirable in lieu of the previous tetanus prophylaxis.

Local wound care will be the second bottleneck and, in some respects, will be the most difficult treatment of all. A present controversy among foremost authorities on the treatment of burns still rages over the concept of the long accepted closed method of treatment[1, 2] in contrast to the open surgical method.[3, 4, 5] As McDowell[6] has so ably pointed out, burns in certain locations can best be treated by the closed method in preference to the open and in other areas the converse

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is true. The closed method is a definitive method which requires time, training of personnel, considerable supplies and secondary dressings. It has definite advantages for burns of the hand and circular burns of the trunk and neck. Aside from the disadvantages previously mentioned, infection occurring under the closed dressing would convert some burns from what would have been second degree into third degree in effect by destruction of some of the viable islands of epithelium. Infection would be of particular importance to those patients who had concomitant radiation injury which damages the humoral and cellular defense mechanism. The closed method of treatment would make easier the matter of transportation of patients with coverage problems to hospital centers for skin grafting. For the closed method of treatment, the stock-piling of required supplies would be an almost insurmountable problem.

The exposure method of treatment is a simpler method in some respects but is not altogether simple. Dressings are not needed but it is desirable but not essential that patients be placed on sterile sheets. It would appear that one would need few attendant personnel for the open method, but such is not the case. Following a rapid and gentle cleansing of the burned area with bland soap and water followed by saline solution the large loose sheets of separated skin are removed, the large blisters broken and the tops removed. Under ideal circumstances such burned surfaces are exposed to the air and allowed to dry without the burned wound touching the underlying sheet or another part of the patient's body. Within a few hours, a thin dry eschar forms over the burned surface. This protective seal keeps in the fluids which had been leaking out on the body surface and produces an almost impenetrable barrier to bacterial invasion. Because the eschar is inelastic, parts that are in constant motion or are not easily immobilized tend to crack. Such danger areas are the neck, groins, elbows, wrists, fingers and knees. Some of the burn wound edema can be prevented by placing the burned part in an elevated position. This can be accomplished for extremities by various sling apparati. Even though central or radiant heating is highly unlikely, wrapping the patient in bedclothes for warmth would be definitely contraindicated early after starting the open treatment. It should be pointed out that, if cracks, crusts, pustules or cellulitis at the burn wound margin appear, the open method may be of distinct disadvantage. Blocker[7] feels that any such open wound should be covered, that is, the part of the wound that shows a crack and therefore infection. The ideal openly treated patient has a thin dry eschar over his burned surface and has no odor about his wound. The infected burn has odors quite well known to those treating burns. In fact, such burned patients neglected are unforgettable, and are definitely worse off than those who have had the closed treatment. The doctor in charge of these open wound patients should inspect each patient at least once daily, making suggestions for elevation of extremities, cleaning up infected crusts and covering those that need covering, providing such is possible. There is no question in anyone's mind, aside from the saving of money, that most patients with the open method are easier to care for, have less pain, lose less fluid from the body surface and have less infection. They are not so easy to transport as those with the closed method of treatment and perhaps the burned hands, necks or trunks, deeply burned, do not do as well as by the closed method.

After early emergency consideration, treatment should be directed toward maintenance of the patient's general condition which always takes precedence over local factors. Blood, when available, should be given as it is well known that much blood is lost early with thermal burns and continues to be lost due to multiple reasons. The anemia may not show up for three or four days. Laboratory studies, probably not available under emergency hospital conditions, need not be carried out until the patient reaches the definitive hospital where his coverage problem will be solved. Patients can be transported to these hospitals after a few days when their fluid balance has been established, their urinary output is adequate, they have ceased vomiting and, in general, they appear to be over the acute shock and toxic phase. A patient made septic by wound infection should receive further doses of antibiotics in large amounts, probably shifting over to one of the newer products, chloromycetin, aureomycin or terramycin, the latter being the best all around antibiotic at present. Open surgical drainage should be started by removal of slough and by wet dressings.

Nutrition is important at this stage and should be maintained. To insure adequate nutrition small caliber polyethylene tubes cut in two or two and one-half foot lengths can be inserted through the nose into the stomach and be kept there for days without much irritation. Through such a tube could be given a high protein, high caloric concentrate which could be easily stockpiled as a dry powder to which boiled water is added for use. Such a diet would give the patient two or three grams of protein per kilo body weight a day as a minimum and should provide, at least, a caloric intake of from 2,000 to 2,5000 calories a day.

The aim of early treatment should be directed toward getting the deeply burned patients to definitive hospital centers within two or three weeks of the time of injury.

One cannot determine the actual depth of a moderately severe burn early. What may appear to be a third degree burn may turn out to be a

second degree burn with spontaneous healing of the skin underneath the eschar. Such burns should receive care as though they were all third degree burns. The decision should be made at two or three weeks as to whether or not grafting would be necessary. Minor burns of the flash type often could be treated on an ambulatory outpatient basis. Most of these burns would be of the face and hands and with reasonable care would get well in spite of treatment. The highest priority for definitive care should go to those burns of the hands and face which are deep but not so generally extensive that the patient has not much chance to live.

SUMMARY AND CONCLUSIONS

1. Burns resulting from atomic blasts will be of three types: (1) flash, (2) low temperature thermal and (3) radiation.

2. Casualties will be of such numbers with concomitant injuries that a fairly standard and simple form of treatment must be known, taught and practiced by all those caring for the burns. Many of these will be first aid workers and not doctors or nurses.

3. Comparison between the open and closed method of treatment of burns has been made to point out advantages and disadvantages for each, but the open treatment has to be advocated because of its considerably more practical aspects, e.g., those of simplicity, adaptability and economy.

4. General consideration of the patient is of foremost importance always in the treatment of burns and early consists of the treatment of shock with fluid replacement.

5. Other aspects of burn treatment from the standpoint of mass casualties, although less important than shock and local wound care, are: (1) relief of pain, (2) maintenance of blood and nutrition and (3) prevention of infection.

6. Surgical treatment should consist of: (1) minimal cleansing, (2) leaving open to air to form a clean dry eschar, (3) elevation of extremities to prevent edema, (4) wet dressings and larger doses of antibiotics to combat infection once started.

7. All effort should be directed to seeing that patients are evacuated to centers where skin grafting and coverage can be accomplished as close to two or three weeks from the time of original injury as is possible.

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THE TREATMENT OF FRACTURES IN ATOMIC BOMB CASUALTIES

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In the event of atomic disaster, it is expected that fractures will comprise a significant proportion of the resultant injuries. Data from Nagasaki and Hiroshima on this point are deficient because only persons who were ambulatory got to aid stations and later to emergency hospital facilities for treatment. Those who could not get up and walk apparently were left to burn to death in the fires which swept the city within thirty minutes after the bombings. Less than 12 per cent of hospitalized casualties were reported as suffering from fractures, and most of these fractures were of the upper extremities.



R. M. O'BRIEN

It has been estimated that if a bomb strikes an area of population density of 200,000 per square mile, about 70,000 people would be killed outright or so severely injured as not to survive.

It is thought that there would be from 50,000 to 100,000 surviving casualties, of whom about one half would have burns of varying severity, and one half would have injuries including fractures, contusions and lacerations. About one fifth of the total, including both main groups, would have received varying amounts of radiation.[1]

Rescue teams constituted largely of nonmedical personnel will have the important and urgent task of removing the nonambulatory injured persons from collapsed buildings and from beneath debris in the center of the stricken area. Speed will be a most important desideratum in this operation if lives are to be saved in the widespread conflagration that is expected to follow the bombing. Hence, at this stage, only the simplest forms of splinting and emergency care will be practical. Improvisation of splints will be a frequent necessity.

SPLINTS

Mass rescue efforts are aided by the fact that

"patients carry their own splints with them for most fractures."[2] A sling improvised from the patient's clothing amply supports a broken clavicle. A fractured humerus may be bound to the chest. A magazine or folded newspaper can be wrapped around a fractured forearm or wrist. The broken leg can be bandaged to the sound leg.

External splints will be required only in the case of multiple fractures, or in fractures of the spine, pelvis and both legs.

The bombed area undoubtedly will be strewn with pieces of lumber and other material from which first aid splints can be fashioned. A wood door makes a satisfactory litter. Despite efforts at stockpiling and other preparations, it is unlikely that Thomas splints and other types of prepared splints will be available when and where needed at the disaster site.

The casualty who has lost consciousness will have to be examined for fractures before transportation. The conscious person generally will be able to state where his fracture is located.

The person with a suspected cervical spine fracture should be transported face up on a litter. He should not be permitted any motion, active or passive, which will allow flexion of the neck. Sandbags, padded bricks or other weights can be used at either side of the head to prevent rotation.

When thoracic or lumbar spine fracture is suspected, the injured person should be transported face down on a litter, head turned to one side, allowing neither unnecessary flexion nor hyperextension of the spine.

RELIEF OF PAIN

Splinted fractures usually are not unbearably painful and ordinarily will not require morphine unless a complicating burn or other condition demands relief of pain. Morphine stocks will be low and must be conserved. Barbiturates will be useful in allaying anxiety and apprehension. Morphine always must be withheld when skull fracture or head injury is suspected.

OPEN OR COMPOUND FRACTURES

First aid measures for an open fracture of any bone include control of bleeding by pressure (the tourniquet should be used only as a life saving measure), covering wound with a sterile dressing and application of a splint.

Because of inevitable delays, confusion and difficulties in transportation that probably will occur, any limb to which a tourniquet has been applied likely will have to be amputated at the final treatment center.

Common in catastrophes, the open fracture presents the additional hazard of infection. The splinting of such fractures is the same as for closed fractures, after the wound has been covered with a sterile dressing.

After the casualty with a fracture comes under medical supervision in installations near the collecting points, more formal splinting can be applied. Split or bivalved plaster encasements can be applied to the individuals with closed fractures and they can be transported to the remote hospital.

Initial surgery for open or compound fractures should be done as early as possible[3, 4, 5] in installations near collecting points in the case of the severely wounded, and in more remote hospitals in the case of the slightly wounded.

Careful debridement, without closure of the wound, and immobilization are essential, but it is better not to attempt accurate reduction of the fracture at this stage. Accurate reduction can be secured at the time of reparative surgery in hospitals removed from the disaster area.

FRACTURE TREATMENT IN THE REMOTE HOSPITAL

The problems of fracture treatment in the remote hospital will be, first, to handle a great mass of patients; second, to vacate beds as rapidly as possible; third, to hold the patient as long as required so that definitive treatment can be given the fracture.

Femoral shaft fractures, as well as many other long bone fractures, will be treated whenever possible by the use of intramedullary nails. The patient with a femoral shaft fracture who formerly occupied a hospital bed for three or four months or longer, will, in many cases, be ready for discharge from the hospital after two weeks.

Reparative wound surgery will be done. Previously debrided wounds will be inspected and, if clean, will be closed. Open wounds containing exposed bone, fascia or tendon will be covered with skin as soon as possible.

SUMMARY

In the event of atomic bomb explosion, injuries will occur in overwhelming numbers, together with widespread destruction of facilities for medical care.

Prompt removal of casualties from the center of destruction will be necessary to save lives that otherwise will be lost in the widespread fires that are likely to follow the bombing.

Fractures must be splinted at the disaster site, but materials for formal splinting may not be available. Simple, available technics of immobilization have been suggested.

The principles of management of casualties with open fractures that were developed during World War II are applicable to civilian disasters, and the lessons learned should be applied.

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CURRENT CONCEPTS OF THERAPY OF THE RADIATION SYNDROME

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THE STUDY OF therapeutic measures which may be beneficial in the treatment of that varied group of symptoms manifest after exposure to whole body radiation has been extraordinarily extensive and singularly unproductive. Much of the literature deals with treatment of the radiation disease which follows the localized use of ionizing radiation (x-radiation) to specific areas of the body in the treatment of cancer and allied states. Much of this information can be applied directly to that syndrome caused by exposure of the entire body to such radiations.



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Exposure to whole body irradiation does not produce signs or symptoms uniquely different from other types of injury. The initial symptoms and signs of primary shock, the subsequent period of toxicity which follows a latent period of some days (similar to an incubation period), the period of infection, the period of hemorrhage and the final period of abnormal nutrition and metabolism are essentially similar to those following certain diseases or exposure to noxious agents. However, with the single exception of the radiation syndrome, it is unusual to find this series of physiologic patterns occurring in a single disease state or a toxic exposure.

Some comment is necessary concerning the biologic effect of ionizing radiation. Certain generalizations are possible. It has been noted that many types of effect can be observed and that these are all nonspecific, that is, not characteristic of radiation alone. All types of radiation, be they gamma rays, beta and alpha particles or neutrons, produce the same qualitative effect, although the magnitude varies with the individual type. As far as is known, all effects of ionizing radiation are injurious to cells and tissues. The amounts of energy which are required to produce such reactions are so small as to indicate definitely that some sort of a multiplication of effect exists in which, following the physical change produced by the radiation, certain chemical changes of abnormal type occur which produce in the end the observed biologic effect. A certain latency exists between exposure and the production of the first symptoms. In a way this latency is similar to that observed in the incubation period of a disease in which a time lapse between exposure and the development of clinical symptoms is noted. A surprising variability is encountered in the susceptibility of certain cells and tissues ranging from the rapid reaction of the extremely sensitive lymphocyte to the resistance of cells of muscle and nerve tissue. Survival from ionizing radiation is accompanied by fixed types of pathology, but the examination of the pathologic material alone will not indicate the probable survival or death of the individual, obviously of importance in determining the course of a disease. Many of the effects encountered, as in other diseases, are reversible with a return to normal physiologic pattern. Finally, as stated previously, the many effects observed cannot be duplicated by a single agent or disease process.

With all these facts in mind it is not surprising that marked variability concerning the behavior of a single individual can and does occur. This is exhibited by observations from a single well controlled experiment in which a variation in mortality or morbidity of from 40 to 50 per cent may easily be observed. Such a fact makes the evaluation of a single agent or treatment schedule difficult, inasmuch as good results may be obtained on one occasion and poor results in the next. Secondary factors which obviously contribute to such a variability include the nutritional state of the animal, presence or absence of appetite, physical factors of external environment (such as temperature, humidity), handling of the animal, intercurrent infection, age, activity, as well as others. Compounds or methods which may be effective in one species are ineffective in another. Variations in intestinal absorption may produce better results in one group or species than in another when oral medication is tested. Finally, as will be discussed, it must be commented that certain compounds are effective when given prophylactically prior to radiation but have no demonstrable action when given after the exposure has been received.

Enumeration of all the compounds, materials and treatment schedules which have been tested for therapeutic effect is impossible in a brief review. Materials reported as effective include sulfhydryl compounds such as cysteine, methionine and glutathione, vitamin P substances or flavenones, various antihemorrhagic materials such as toluidine blue, protamine and the like, biological agents including estrogens, androgens, adrenal-cortical hormones, antihistaminic materials of all types, Dramamine, plus other materials which cannot be classified easily. Consideration has also been given to the correction of blood and plasma volumes, fluid and water balance, salt, optimal nutrition, physical factors of heat and cold, activity and the like. Recent attention has been directed toward use of blood and blood substitutes, plus transfusion of materials such as platelet extracts from whole blood itself. Transplantation of tissues and tissue fragments such as spleen and bone marrow have been encouraging as of potential value in tissue regeneration and recovery. The control of

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specific infection and infectious processes has perhaps been the most encouraging and practical advance in therapeutic procedures to date. Careful evaluation of all of these methods is demanded if optimum therapy is to be given to the individual suffering from radiation exposure. Further studies will be necessary for the analysis of the more complex picture of combined injury to burns, trauma and radiation together, which occurs as the result of atomic explosion.

THE RADIATION SYNDROME

The clinical picture of symptoms and signs which follow the exposure of individuals to whole body radiation has been termed the radiation syndrome. Although some of these signs and symptoms are similar to those which follow exposure of a limited area of an individual to therapeutic x-ray, it has become customary to classify these treatment reactions as radiation disease. As far as is known, these symptoms and signs are identical in individuals receiving radiation exposure alone or radiation exposure together with complicating burns and traumatic injury. As in other diseases, it has become customary to divide the radiation syndrome into certain specific phases. These may be listed as in the following table.

Table 1. *Symptoms and Signs of Radiation Syndrome*

1. Shock reaction—1 to 2 hours after exposure
2. Latent period (no definite symptoms)—4 to 14 days
3. Infection and toxicity—9 to 30 days
4. Hemorrhage—14 to 30 days
5. Anemia and mulnutrition—24 to 60 days
6. Convalescence

The initial or shock reaction appears within the first two hours after exposure to dosages in excess of an LD 50 for the species (approximately 350 to 400 r for man). It is characterized by a shock like state with fall in blood pressure, vomiting and pallor with a subsidence in symptoms in the first twenty-four hours. As such, it is similar to primary shock.

The latent period might be better termed one in which no specific symptoms or signs are found. It is during this time that the chemical alterations, later to become manifest as signs and symptoms, are in the process of development. The latent period is followed by what might be termed a period of toxicity in which the animal appears quite ill, but no specific symptom complexes have yet developed. The stage of infection is one in which a profound depression of the granulocytes in the circulating blood are found and is accompanied by the presence of developing infection similar to those following aplastic anemia. These infections predominate in the oral cavity, intestinal canal, the skin and pulmonary tree. The period of infection is followed within the specified number of days by a period of hemorrhage of a type identical with the thrombocytopenic purpura as seen following exposure to noxious materials. As is expected, hemorrhages occur on all surfaces of the body as well as into organs and viscera, thereby producing symptoms of all types and grades of severity. Should the individual survive hemorrhagic and infectious stages, a period of anemia and malnutrition is encountered, characterized by signs and symptoms of weakness, lassitude, anorexia, susceptibility to infection and the like. Survival from this phase eventually leads to complete or incomplete recovery, largely depending upon complicating disease.

The preceding discussion represents the uncomplicated picture of the radiation syndrome seen in the 50 per cent lethal dose level. This was selected inasmuch as it demonstrates the radiation syndrome in a clearly defined manner in all of its separate component parts. However, the symptom pattern may be altered considerably by higher and lower dosages of radiation. If one is to consider all of the possible radiation syndromes which can be developed, one can arrive at the following listing. Much of this information, of course, was obtained on animals, but it is assumed that in part the information would be true for man at such levels of exposures.

In table 2 one notes that the higher the dosage of radiation, the more acute in onset the symptoms become, the shorter the latent period, and the tendency toward absence of the infection and hemorrhage which are so characteristic of

Table 2. *Exposures to Penetrating Radiations (X-Ray, Gamma Ray, Neutron)*

Radiation Syndrome	Dosage	Time of Death	Reaction
Supra lethal			
Immediate Death	25,000-70,000 r	2 hours	Shock to death under exposure
Early Death	1,000-20,000 r	2-6 days	Shock with toxic death
Lethal (Acute)			
Very severe (LD/100-30 days)	600- 1,000 r	5-9 days	Shock, short latent period, toxicity 4+
Severe (LD/70-90)	450- 600 r	8-20 days	Shock, 7-10 day latency, toxicity 2+, infection 4+, hemorrhage 2+
Moderate	350- 400 r	17-35 days	Shock±, latency 14 days, toxicity reduced, infection 4+, hemorrhage 4+, anemia, malnutrition, epilation
Nonlethal (subacute)	300 r	Complicating Disease	No primary reaction, latency 18-30 days, controllable infection 1+, slight hemorrhage, marked anemia and malnutrition, epilation
Chronic	Daily	1-10 years	No specific signs

later periods. With the lower dosages the initial symptoms disappear, the latent period becomes prolonged, clinical infection may be absent due to lack of profound depression of marrow, hemorrhage may become minor and symptoms of weakness, of lassitude and the like will be evident at later stages. Between these two extremes, various grades of severity may be found. Each of these is important to recognize in view of the specific therapy which may be required.

For specific detail as to the nature and types of the radiation syndrome, it is wise to refer to the many current publications on this subject.[1]

AGENTS AND PROCEDURES WHICH MODIFY THE RADIATION SYNDROME

Information available, concerning the effect of various agents and procedures on the radiation syndrome divides itself into three parts. These may be listed as (1) agents or procedures effective when given or used prior to irradiation, (2) those effective at the time of irradiation and (3) those effective if used therapeutically after the radiation has been received. While the last group is of the greatest importance, in this account, experiments of the first two classifications provide valuable information necessary in interpreting the variability which may occur in the individual patient.

Most important of the agents administered prior to irradiation can be listed as: (1) Bone marrow stimulus such as phenylhydrazine, estrogens and other materials which initiate a stimulus to hypertrophy of bone marrow elements during the brief period before administration of the radiation.[2] Inasmuch as the depression of the bone marrow occurs in a rough percentage fashion, (at LD/70 doses depression to 10% of preradiation values are typical) the presence of unusually large numbers of functional cells in an active bone marrow provides for a more elevated granulocyte count even at the lowest levels. Individuals who maintain granulocyte counts of more than 1,000 cells have a much improved chance of recovery. (2) Sulfhydryl compounds such as cysteine, methionine, glutathione given prior to radiation definitely alter the mortality.[3] The mechanism by which this is accomplished is definitely not understood. If these substances, however, are given therapeutically no effect is obtained.

Those procedures and agents effective when used at the time of the radiation include (1) whole animal shielding accomplished by lead or material of equivalent density which suffices to reduce radiation at least to sublethal levels, (2) localized shielding of the spleen, liver or other portions of the body gives great protective benefit through some mechanism as yet but poorly understood.[4] It is possible that the real effect is the development of secondary centers of hematopoiesis in these shielded areas, which in turn aid in combatting the infection and anemia. There are those who believe, however, that a humoral factor is secreted from the protected tissue to other portions of the body, this giving the protective effect; partial asphyxia by the use of 95 per cent nitrous oxide, 5 per cent oxygen mixtures has resulted in an improved mortality. It has been shown, however, that such animals develop certain symptom complexes after a prolonged latent period (in excess of 90 days[5]); (3) exposure of heterothermus animals at temperatures in the neighborhood of 0 C. has resulted in an improved mortality figure, although this method of chilling has not been successful in homothermus animals. The hibernation of certain animals with resulting reduced metabolism has not been shown to be protective.[6]

The procedures or agents which have been shown to be in some way effective if used therapeutically follow.

1. Replacement blood transfusion in which approximately one fifth of the circulating blood of the irradiated individual is replaced by the same volume of fresh, normal blood. This procedure used experimentally has resulted in an improvement of approximately 30 per cent in the mortality of dogs receiving an LD/70 dosage of radiation.[7]

2. Transfusion of bone marrow homogenates has been successful in guinea pigs in improving the mortality provided that such transfusion is given within the twenty-four to thirty-six hour period.[8]

3. The use of freshly prepared splenic brei and splenic homogenates has been successful in mice, if given in the first twenty-four hour period. In these three procedures the earlier the transfusion procedure is carried out, the more favorable will be the survival. All of these procedures are still in the experimental stage and considerable time and study must be carried out before practical results can be obtained.[9]

4. On the basis of clinical observations made in the Japanese and also in experimental animals, rest has been shown to be of marked importance. Casualties resulted in the Japanese in individuals who carried out forced labor shortly after exposure. Dogs exposed to fixed work loads, receiving midlethal exposure, showed a marked increase in mortality.[10]

5. Within the last two years it has been definitely shown in this laboratory as well as elsewhere that the use of the wide spectrum antibiotics, Aureomycin and Terramycin in particular, is followed by definite improvement in mortality ranging between 35 and 50 per cent in dogs receiving in excess of LD/50 dosage of radiation.[11] This improvement in mortality is obtained only if Aureomycin or Terramycin is started immediately after the radiation exposure (within twenty-four hours) and continued throughout the twenty-first day. While it is estimated that the major

improvement resulting from the use of these antibiotics is in their ability to suppress and control the existing infection in the injured gastrointestinal canal, skin and pulmonary tree, it is also quite possible that some antitoxic or antimetabolic effect exists which is responsible for the complete detoxification of such animals during the early period. Use of these antibiotics results in a definite lengthening of the latent period by as much as five to seven days in certain instances. Dosage to be used has been that of clinical order, which in the human would be approximately 1-1/2 to 3 gms. daily.

6. Considerable debate has developed concerning the value of whole blood transfusion as a therapeutic measure in the radiation syndrome. Certain experiments have produced fatal results due to increased hemorrhage while others have in the same way indicated at least partial detriment.[12] A recent series of experiments carried out in this laboratory indicates that whole blood transfusions should be used only in the case of dire necessity when only by this method can maintenance of life be sustained.[13] Administration of blood at routine intervals without clinical indication has resulted in a definitely detrimental increase in hemorrhage plus increase in infection probably in the localized areas of hemorrhage. It is obvious, of course, that the clinical indications are those of definite blood loss, either due to hemorrhage or lack of blood formation due to anemia. It must be emphasized that indiscriminate use of blood in individuals exposed to high dosage of radiation may be detrimental and should be avoided.

7. Other materials such as the so-called antiheparin substances (protamine and toluidine blue)[14] and Vitamin P substances including rutin[15] have been postulated as beneficial in radiation disease. There has been considerable discussion concerning results obtained with these materials and as yet the findings are in no way ready to be applied to direct clinical use.

8. The use of platelet transfusion as a method of control of hemorrhage has produced good results, although as yet the procedure is not of practical significance.[16]

TREATMENT OF THE RADIATION SYNDROME

From the comments made in the preceding section it is obvious that at the present time only certain procedures of practical nature are available for use in the direct treatment of the radiation syndrome. The best treatment schedule is based almost entirely on supportive therapy, plus the control of those complicating factors due to infection, hemorrhage, nutritional deficiencies, abnormalities in fluid and electrolyte balance and anemia. It is obvious that none of these procedures will be markedly successful in individuals receiving more than the 100 per cent lethal dose (calculated at approximately 600 r or more). From the practical observations made in Japan and calculations formulated on the basis of American cities it is quite likely, however, that no individuals will survive in areas where this dosage of radiation would be received unless sufficient shielding were present also to counter at the same time the tremendous casualty effects due to burns and injury. Those individuals who, however, receive less than 600 r or have partial shielding of critical areas of the body (but in the 600 r area) may be saved if certain principles in treatment are followed carefully.

Of utmost importance will be immediate hospitalization on a complete bed rest regimen of individuals receiving this amount of exposure. Special attention must be given against possibilities of cross infection. In addition, great care must be taken to provide good prophylaxis of skin and all mucous membranes against infection. As soon as possible after the exposure oral administration of clinical dosage amounts of Aureomycin, Terramycin or possibly Chloromycetin* should be given if results of animal experimentation are to be followed. Use of penicillin and streptomycin, of course, is not discouraged and may be indicated if specific sensitive bacteria are found. Adequate fluids must be provided. Bland diets should be used so as not to seriously disturb the damaged and physiologically deranged intestinal mucous membrane. It is recommended that transfusions and intravenous fluids be administered with great caution, and only when the clinical condition of the patients indicates this as a definite necessity. Failure to observe this caution may result in an increase in the hemorrhagic tendency which follows radiation exposure. It is not desirable in the experience in this laboratory to maintain hematocrit values in excess of 80 per cent of normal values. The major item in which replacement is necessary is that of red cells and red cell transfusion may be desirable. Occasional transfusion reactions of unusual type may be observed, but none to date have had serious consequences. During the convalescent period administration of blood during the phase of anemia may be a life-saving procedure. During the convalescent period the administration of high protein, high caloric diets is desirable. This may be fortified by the use of iron supplements, folic acid or vitamin B_{12} if bone marrow depression is of a serious nature. It is important during the convalescent period to keep careful watch for the possibility of intercurrent infection, particularly in epidemic form. The use of

* The dosages of Chloromycetin used may cause depressive effect on bone marrow.

other antibiotics than the individual has already used in maintenance dose may be recommended for such care.

Extensive experimentation is now in progress concerning possible other methods of therapy which may have even greater value than those indicated. To date nothing has furnished better results than the use of rest, antibiotics, good nursing care and judicious use of whole blood transfusion. While splenic extract and bone marrow and platelet transfusion suggest great promise, much additional work is necessary before they may be introduced into general use.

SUMMARY

1. A brief discussion as to the nature of the radiation syndrome is given. Specific comment is made on certain signs and symptoms of definite importance in correct therapy.

2. A discussion of the procedures and agents effective at the present time in modification of the radiation syndrome is given. These are analyzed briefly as to probable physiologic effects.

3. An outline of the present day concepts of correct therapy of the radiation syndrome includes the use of rest, antibiotics, careful nursing care and whole blood transfusion.

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RECENT KNOWLEDGE ON TREATMENT OF CHEMICAL WARFARE CASUALTIES

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Chemical warfare need not be dramatized and the public need not be terrorized to prove its importance to civil defense. On the other hand, there is no reason to depreciate or to minimize chemical warfare now as a civil defense problem. To do so would be shortsighted. It would be just as unrealistic to assume or suggest that the civilian population is likely to be attacked generally with more than a limited number of chemical agents, especially in the immediate future, or to try to provide counter measures and protective means for all of the known hazards. The objective here, therefore, is to orient thinking in the broadest manner. One may proceed to review some known facts and to visualize possible civil defense problems related to chemical warfare.[1] No effort whatever will be made to predict agents likely to be employed, the likely targets against which they would be used or to evaluate relative merits or choice between available chemical agents, or between them and other modes of attack.


COL. W. L. WILSON

Wood has stated that until an enemy could establish bases at or within borders of the United States the single group of chemical agents offering civil defense problems would be nerve gases.[2] One may agree and still question whether that could be too late to train medical services of civil defense for the potential chemical problems. It is reasonable also to recall the recent vast effects of incendiaries, highly destructive chemical warfare agents upon Germany[3, 4] and Japan[5] and to refer to subsequent overall estimates of the significance of fire-war.[6, 7] There is full compatibility between the opinions of Wood and others cited and a recent Federal Civil Defense Administration publication's statement that "While the nerve gases would be most likely to be used against civilians in the event of chemical attack, a few key persons in the chemical warfare defense branch of the civil defense health service need to be familiar with all types of war gases."[8]

It is reasonable to stress the potential psychologic effects of limited atomic and nerve gas attacks followed by artfully timed attacks by harmless but perceptible chemical agents, perhaps scattered also, and combined with psychologic warfare. Chemicals were visualized before 1940 as possessing unusual potential for retarding,

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harassing, terrorizing, depressing people.[1] Many scare stories suggested widespread death and desolation resulting from chemical attacks. Today with the atomic bomb publicity experiences one is sure to need knowledge of chemicals and readiness to detect, evaluate and disseminate accurate reports concerning them to the public immediately. This will constitute the greatest antipsychologic warfare armaments if chemical attacks should be attempted, threatened or reported by an enemy. In brief, knowledge will permit preparedness, and both will instill confidence into civil defense services and the population. Negative knowledge and reporting would be required just as much as positive, for the same purpose.

Responsibilities for chemical warfare, and what to do about it, rests upon individuals, civil defense units and governmental agencies.

Three responsibilities existing for civil defense units which are beyond the capabilities of the average individual citizen are:

Detection and identification, monitoring for which would require automatic devices, almost immediate analysis and decisive report to the public by direct sounding of an alarm or by a central control agency to which has been furnished reports.[8]

Decontamination of individuals and their clothing, equipment, water and food, and whole areas, buildings or plant facilities, for which previously trained personnel in units, transport and means for decontamination must be provided.

Chemical casualty treatment, including decontamination also where necessary, for which previously trained units must be furnished essential means.

Governments also have three great fields of responsibility, whether federal, state or local. They must provide information to train individuals and units to protect citizens in attacks, to combat rumor and panic as well as other deteriorating phychological effects, and to inspire confidence and acceptance of leadership.

They must provide personnel and materiel means and management.

They must provide organized activities directed against chemical attacks consisting of defense against chemical attack, many aspects of which can barely be mentioned here[8, 9] and treatment of casualties from chemical agents, also merely touched upon here.[10]

I shall discuss chemical warfare agents in large groups only, but students planning future civil defense consideration should learn all possible about individual agents in a methodical manner, utilizing a standard operating procedure (S.O.P.) check-list, somewhat like the following ten points, as a guide:

1. Nature of agent.[8, 9, 11]
2. Munitions for chemical agents.[9]
3. Methods of dispersion.[9]
4. Effects upon people.[8-11]
5. Effects upon food and water.[9]
6. Means of protection[8, 9, 11] where human contact is unavoidable by dispersion or other method: individual by gas masks, protective clothing, seeking shelter inside house or shelter, collective by detection devices, alarm systems, gas proof shelters; protection of supplies and equipment, food and water, clothing and shelters.
7. Special protection of materiel, for example food, water and other items by protective packaging.[9]
8. Methods of decontamination[8, 9, 11] in which the agents are actively removed, destroyed, fixed or sealed, or passively allowed to disperse or vanish with climatic or other natural action, and other means. Active decontamination is possible for: individuals, equipment and areas. Various decontaminating agents are used in different ways against the different agents.
9. Methods of treatment are first aid,[8, 9, 11] definitive,[10] sorting,[1, 10] treating.[10]
10. Relationship between chemical warfare agents, their effects and their handling.

It is apparent that no such quick treatment as just presented is adequate. Maximim understanding of at least two groups of current chemical warfare agents must be attained. First, the matter of incendiaries is one which should have continuing attention. Their great potential proved by World War II attacks upon Tokyo, Hamburg and other cities have continued to the present time. This group is understood enough to permit going on to the other, which is nerve gas, and details of which have been publicized recently.[2, 8, 11] More toxic than formerly known chemical warfare agents, they gain entrance to the body by inhalation of the vapor or by absorption of the liquid agent through the skin, the eyes or the gastrointestinal tract.[12] Detailed consideration of this newer agent would serve also to illustrate many of the points mentioned in the standard operating procedure check list. The following brief notes are condensed from available excellent reference material.[2]

Exposure to traces of nerve gas vapor causes eye, respiratory and nasal symptoms. A slightly greater exposure induces ciliary spasm, pain on focusing the eyes, and a drawing sensation or pain in back of the globes radiating frontally or to the occiput, and is often accompanied with moderate photophobia. The paroxysmal bronchospasm of low doses does not produce anoxia, it lasts only a few days and is readily relieved by small doses of atropine sulfate. The inhalation of larger doses of nerve gas vapor, or the absorption of liquid nerve gas by other routes, causes a rapid and severe bronchospasm which obstructs both inhalation and exhalation. The subject becomes confused and cyanotic, may have nausea and vomiting and soon falls unconscious. Meanwhile, his blood pressure falls to shock level; severe bradycardia develops and cardiac

arrest may occur as a temporary or terminal event.

Relatively large doses of atropine are required for the severe nerve gas casualties and a principal danger is undertreatment. From the standpoint of rapidity of action and ease of control of dosage, intravenous administration is preferable. The intramuscular route may be used if the patient is not cold or in shock. Absorption of the drug from the subcutaneous and oral routes is too slow for the initial treatment. Details of treatment should be studied elsewhere.[2, 10]

In serious respiratory cases paralysis prevents effective respiration. The paralysis is both central due to anoxia, and peripheral due to muscle fatigue and curare like blocking of the myoneural junctions of the diaphragm and accessory muscles of respiration by excessive amounts of acetylocholine. The chest is flaccid and collapsed. Wood reports that usual methods of artificial respiration, such as the Schaefer prone pressure method or the Eve tilt table method, are ineffective or impractical.[2] A new method suggested by Emerson may be worth a trial in emergency, but there has not yet been sufficient work to assess its effectiveness properly. This method consists in placing the patient in a prone position, grasping thighs at the level of the pubis and alternately lifting and lowering his hips ten to twelve inches. Preliminary trials indicate that this method may ventilate the lungs effectively in cases of flaccid paralysis of the respiratory muscles.*

The use of an efficient mechanical resuscitator is probably the most practical and reliable method of giving artificial respiration in these cases, provided the device can be got to the patient, or the patient to it, before irreversible anoxic damage occurs. A light, portable hand powered, bellows type resuscitator may be the most practical for emergency rescue work. Animal experiments indicate that forty-five minutes of artificial respiration may be required to restore natural breathing after two or three lethal doses of nerve gas.

If the skin should be splashed with liqiud nerve gas, it is important to remove the contamination as soon as possible. The safest and most effective method is to swab the skin immediately with an alkaline fluid. Ammonia water, a 5 to 10 per cent solution of sodium carbonate or a 1 to 2 per cent solution of sodium hydroxide is suitable for this purpose. If none of these is available immediately, any available absorbent material may be dampened with water and the area swabbed with this. Swabbing or rubbing the contaminated skin with dry materials must be avoided as this greatly increases absorption and toxicity. If only dry absorbent material is available, the excess liquid may be gently blotted from the skin, provided wiping and rubbing are carefully avoided, but the contaminated area must be washed with soap and water or swabbed with an alkaline fluid as soon thereafter as possible.

In summary, the necessity for civil defense preparedness for chemical warfare has been reaffirmed; a general discussion of the subject in the broadest terms has been presented; limited types of agents, the incendiaries and nerve gases have been stressed. Chemical warfare against the United States is a practical possibility under certain circumstances.

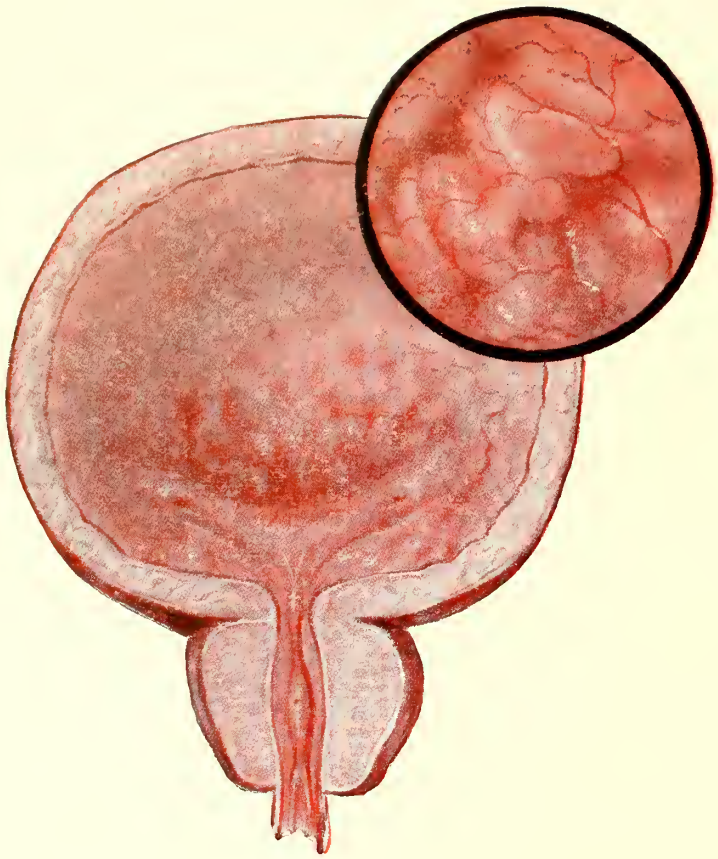
Greek fire was chemical warfare when first introduced and it wrought havoc. Gunpowder was chemical warfare and was expected to eliminate warfare because it was so horrible. Chemical warfare of World War I prompted new assumptions along similar lines. After World War I reasonable analysis resulted in activities which made the use of chemical warfare, as it is known, too uncertain to justify risking any except incendiary attacks in World War II. Atomic bombs used in World War II, as it subsided, resulted from application of knowledge concerning chemistry and physics as sciences. Who can foretell the future of chemical warfare with such an experience to review?

Only one continuing benefit from this all too brief presentation is visualized. That would be a real stimulus to the civilian medical reader to review the latest available information periodically in order to learn more about the treatment of chemical warfare casualties.[10] Administrative, organizational and technical details can be obtained equally readily.

* Author's note: See late report by Dill, D. B.: Manual Artificial Respiration, USAF Med J. III:2, p. 171.

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in urinary tract infections:

"Terramycin was selected [for 67 patients] in preference to other broad-spectrum antibiotics in view of high urinary excretion rate following small oral doses of the antibiotic." Post-operative pyuria was significantly reduced after 44 major gynecological operations, and various other genito-urinary complications responded equally well.

Blahey, P. R.: Canad. M.A.J. 66:151 (Feb.) 1952.

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Bacteremia and septicemia
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Septic sore throat • Pharyngitis
Acute and chronic otitis media
Acute bronchitis • Laryngotracheitis
Tracheobronchitis • Sinusitis
Chronic bronchiectasis
Pulmonary infections associated with pancreatic insufficiency
Scarlet fever • Urinary tract infections
Acute and subacute purulent conjunctivitis
Acute catarrhal conjunctivitis
Chronic blepharoconjunctivitis not involving the meibomian gland
Abscesses • Cellulitis
Furunculosis • Impetigo
Infections secondary to Acne vulgaris
Erysipelas • Peritonitis

Gram-negative Bacterial Infections

Gonorrhea • Brucellosis
Bacteremia and septicemia
Friedländer's pneumonia
Mixed bacterial pneumonias
Pertussis • Diffuse bronchopneumonia
Post-partum endometritis • Granuloma inguinale
Dysentery • Urinary tract infections
Respiratory tract infections
Cellulitis • Peritonitis • Tularemia

Spirochetal Infections

Syphilis • Yaws • Vincent's infection

Rickettsial Infections

Epidemic typhus • Murine typhus
Scrub typhus • Rickettsialpox
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Editorials

ANNUAL SESSION—1952

The Missouri State Medical Association, founded in 1850, held its 94th Annual Session at Hotel Jefferson, St. Louis, March 30 through April 2, 1952, with 1,552 persons registered for the meeting.

The scientific program was unusually well received. For the first time a scientific session was held on Wednesday afternoon, the closing day, concurrently with the House of Delegates.

As has been customary the last few years, the Missouri Society of Medical Technologists held their annual meeting in the headquarters hotel. The Missouri Chapter of the American Physical Therapy Association met with the Association for the first time. The Missouri Chapter of the American Trudeau Society and the Missouri Chapter of the American College of Chest Physicians met with the Association as usual.

Fifteen scientific exhibits were shown and awards were given to the three outstanding ones as chosen by a special committee of the House of Delegates. These were "Rheumatism Clinic," General Hospital No. 1, Kansas City; "Testing the Drunken Driver," American Medical Association and the Missouri State Medical Association Committee on Alcoholism, and "An Introduction to Fractures," Missouri State Medical Association Committee on Fractures and the American College of Surgeons' Missouri Regional Committee on Trauma.

Sixty-four technical exhibits were presented and these exhibitors were highly pleased with the interest shown by those attending. A special committee of the House of Delegates selected three of the technical exhibits for awards as follows: Wyeth, Incorporated, Philadelphia; Mead Johnson & Company, Evansville, and The Upjohn Company, Kalamazoo, Michigan.

More than 500 persons attended the Annual Banquet in Honor of Past Presidents which was held Tuesday evening, April 1. Louis H. Bauer, M.D., President-Elect of the American Medical Association, pleased the audience with his address on "The Status of Medical Education and the Supply of Physicians in America."

Dr. Charles E. Lively, Director of the Department of Rural Sociology of the University of Missouri, delivered an address on Sunday, March 30, before the secretaries, presidents and editors of county medical societies. Dr. Lively told of the plans formulated by the Missouri Health Council for the survey of indigent medical care in Missouri.

J. W. Thompson, M.D., St. Louis, was installed as President. Officers elected were: E. Claude Bohrer, M.D., West Plains, President-Elect; Clinton W. Lane, M.D., St. Louis; P. T. Bohan, M.D., Kansas City, and J. Will Fleming, M.D., Moberly, Vice Presidents; H. E. Petersen, M.D., St. Joseph, Secretary; C. E. Hyndman, M.D., St. Louis, Treasurer; Victor B. Buhler, M.D., Kansas City, Chairman of the Council; W. S. Sewell, M.D., Springfield, Vice Chairman of the Council; Victor E. Scherman, M.D., St. Louis, Speaker of the House of Delegates; Joseph L. Fisher, M.D., St. Joseph, Vice Speaker of the House of Delegates; Delegates to the American Medical Association to become effective January 1, 1953, Paul Baldwin, M.D., Kennett, and A. S. Bristow, M.D., Princeton; alternate Delegates, W. J. Shaw, M.D., Fayette, and Julius Jensen, M.D., St. Louis. New Councilors elected were R. O. Muether, M.D., St. Louis, Third Councilor District; J. Loren Washburn, M.D., Versailles, Fifth Councilor District, and J. H. Summers, M.D., Lebanon, Ninth Councilor District. Donald M. Dowell, M.D., Chillicothe, and Victor B. Buhler, M.D., Kansas City, were reelected Councilors of the First and Seventh Councilor Districts.

Kansas City was chosen as the place for the 1953 Annual Session and the dates will be April 26 through 29, 1953.

MISSOURI MEDICAL SERVICE HAS NEW PROCEDURE

The Missouri Medical Service (Blue Shield) office at St. Louis has made an important change in its methods and procedures. On May 1 that office takes over the complete job of processing the Doctor's Service Reports, which are so vital to the servicing of patients' benefits and payment of bills. Formerly the work had been divided between Blue Shield and Blue Cross.

Past procedure had involved the mailing of as many as three Doctor's Service Reports for one patient in instances in which a physician had delayed excessively in returning the original form. Confusion and duplication of paper work, both in the doctor's office and at Blue Shield, often resulted. From now on, under the new system, only one Doctor's Service Report will be sent for each case.

The whole purpose of the move is to reduce paper work and to cut administrative expenses. Blue Shield operating costs must be held to a minimum if the program is to be able to keep its membership dues low enough to be within the reach of a great majority of families, while providing the greatest possible protection against the major medical and surgical costs of illness.

It is a move that can be completely successful only if all physicians participating in the Missouri Medical Service program do their share by seeing to it that their Doctor's Service Reports are promptly filled out and returned to the Blue Shield office.

Organization and Economics

NEWS NOTES

The Missouri State Board of Medical Examiners will hold examinations at St. Louis University, St. Louis, on May 28 and 29, and at Washington University, St. Louis, June 13 and 14.

The American Goiter Association will hold its annual meeting on May 1, 2 and 3, at Hotel Chase, St. Louis. All physicians are welcome to attend the scientific sessions. There will be a registration fee of $10.00.

Peter G. Danis, M.D., St. Louis, presided as chairman of the Committee on Hospitals and Dispensaries of the American Academy of Pediatrics which held a two day meeting in St. Louis March 7 and 8.

The sixth annual Rocky Mountain Cancer Conference will be held at the Shirley-Savoy Hotel, Denver, Colorado, on July 9 and 10. The meeting is sponsored jointly by the Colorado State Medical Society and the Colorado Division of the American Cancer Society. There is no registration fee for the conference.

The American Association of the History of Medicine will hold its twenty-fifth annual meeting on May 1, 2 and 3 in Kansas City, Kansas, at the University of Kansas School of Medicine. The annual Fielding H. Garrison Lecture and the Logan Clendening Lecture will be presented. The annual banquet will be held on May 2.

George F. Lull, M.D., Chicago, Secretary and General Manager of the American Medical Association, delivered the third Alphonse M. Schwitalla Lecture, sponsored by the Alpha Omega Alpha honorary medical society, at St. Louis University on April 17. Dr. Lull spoke on "Medical Ethics—The Physicians' Guide."

MUSINGS OF THE FIELD SECRETARY

A tri-state (Kansas, Missouri, Oklahoma) Conference on Administration of Health in Schools was held at Oklahoma A. & M. College, Stillwater, Oklahoma, March 19 to 21. The sponsors were: National Tuberculosis Association, American Association of School Administrators, American Association for Health, Physical Education and Recreation, U. S. Children's Bureau, U. S. Public Health Service and the U. S. Office of Education in cooperation with Oklahoma A. & M. College.

The purposes of the conference were:

1. To determine needs of school administrators concerning the organization, administration and teaching of health in schools, and to find ways of meeting those needs and improving health education of children, youth and adults.

2. To encourage continued progress in cooperative planning, working and evaluating in order to achieve full and efficient use of all health education resources—local, state and national.

Invitations to the conference were based upon the thesis that a school health program can be fully effective only when there is cooperation among practicing physicians, educators and public health personnel. The Missouri State Medical Association was invited to be represented at this conference and to contribute to the deliberations by presenting the viewpoints, services and problems of the medical practitioner in relation to administration of health in schools. H. E. Petersen, M.D., St. Joseph, Secretary of the Association and a member of its Infant Care Committee, attended the Conference as the official representative of the Association.

This was a working conference with the thirty-five representatives of the three states divided into four working groups and a broad school health administrative problem assigned to each group for discussion and recommendations. Consultant specialists in the field of health education were available to assist each group in its deliberation. Fred V. Hein, Ph.D., Consultant in Health and Fitness of the American Medical Association, was one who served in this capacity.

Some recommendations from the deliberations of the four working conference groups are:

1. That physicians in private practice be brought into school health program planning at the policy making level.

2. That insofar as possible all family doctors be considered school physicians.

3. That school children have their physical examinations during the summer months by their family physician whenever possible.

4. That teacher training institutions improve the health training given to teachers.

5. In order to coordinate health resources and improve school-community relationships for the purpose of promoting better school and community health programs, some form of community health council should be formed which will bring together representatives of all local groups with definite health responsibilities.

6. Every school system should have a school health council and every school a health committee. They will function in assisting the school board and school administrator in setting up and administering the school health programs.

7. A representative of the local medical society

Migraine In Children

"Migraine may appear during the first years of life. The presence of subjective signs, such as headache and flimmer scotoma, is often difficult to determine in young children. The true nature of the symptoms frequently remains obscure for years."

Vahlquist, B. and Hackzell, G.: Acta Paediatrica *38*: 622 (1949).

NO. OF CASES	SEX	AGE AT ONSET	CYCLIC VOMITING	DURATION OF ATTACK	INTENSITY
31	8 ♀ 23 ♂	3 yrs. (mean)	3 out of 31	2½ hrs.	severe in all cases

TABLE CONT'D

NO. OF CASES	UNILATERAL HEADACHE	NAUSEA	FLIMMER SCOTOMA	VERTIGO	HEREDITY
31	18 out of 31	31 out of 31	12 out of 31	6 out of 31	20 out of 31

(reference given above)

In a study of 400 adult migraine patients, it was revealed that 34% had suffered attacks before the age of 15.* These investigators concluded that childhood migraine was a much greater clinical problem than was previously believed and that psychodynamic mechanisms played an important part in the disease.

These criteria are useful in diagnosis:

Headache attacks with symptom-free intervals plus (at least two of the following) nausea, scintillating scotoma, hemicrania, and hereditary predisposition.

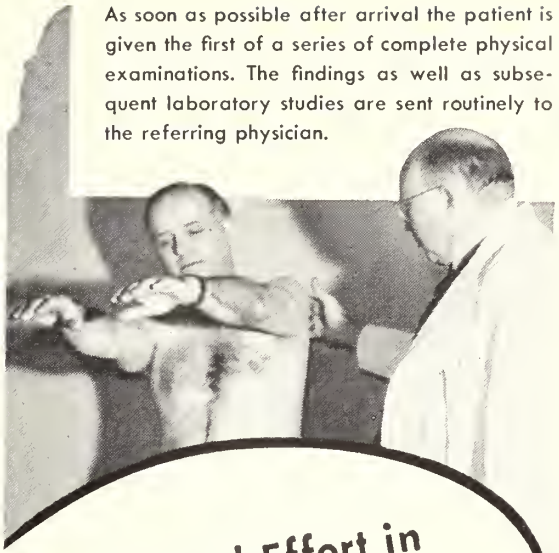
For symptomatic relief in these cases, Cafergot®, N.N.R. (ergotamine with caffeine) may be administered orally. For best results, give adequate dosage promptly.

For children within the age range 7 to 12 years—Cafergot® is administered, one tablet when the attack appears imminent followed by one additional tablet within 30 minutes. Not more than two Cafergot tablets should be administered to children within this age range.

In the adolescent age group, 12 to 18 years of age, the dosage may gradually be increased as necessary up to the usual adult dose, i.e., two tablets when the attack appears imminent followed by one tablet doses at half hour intervals until the attack is aborted. *(Total maximum dose for adults: six tablets for each attack.)*

*Katz, J., Friedman, A.P., and Gisolfi, A.: New York State J. Med. *50*: 2269 (Oct.) 1950.

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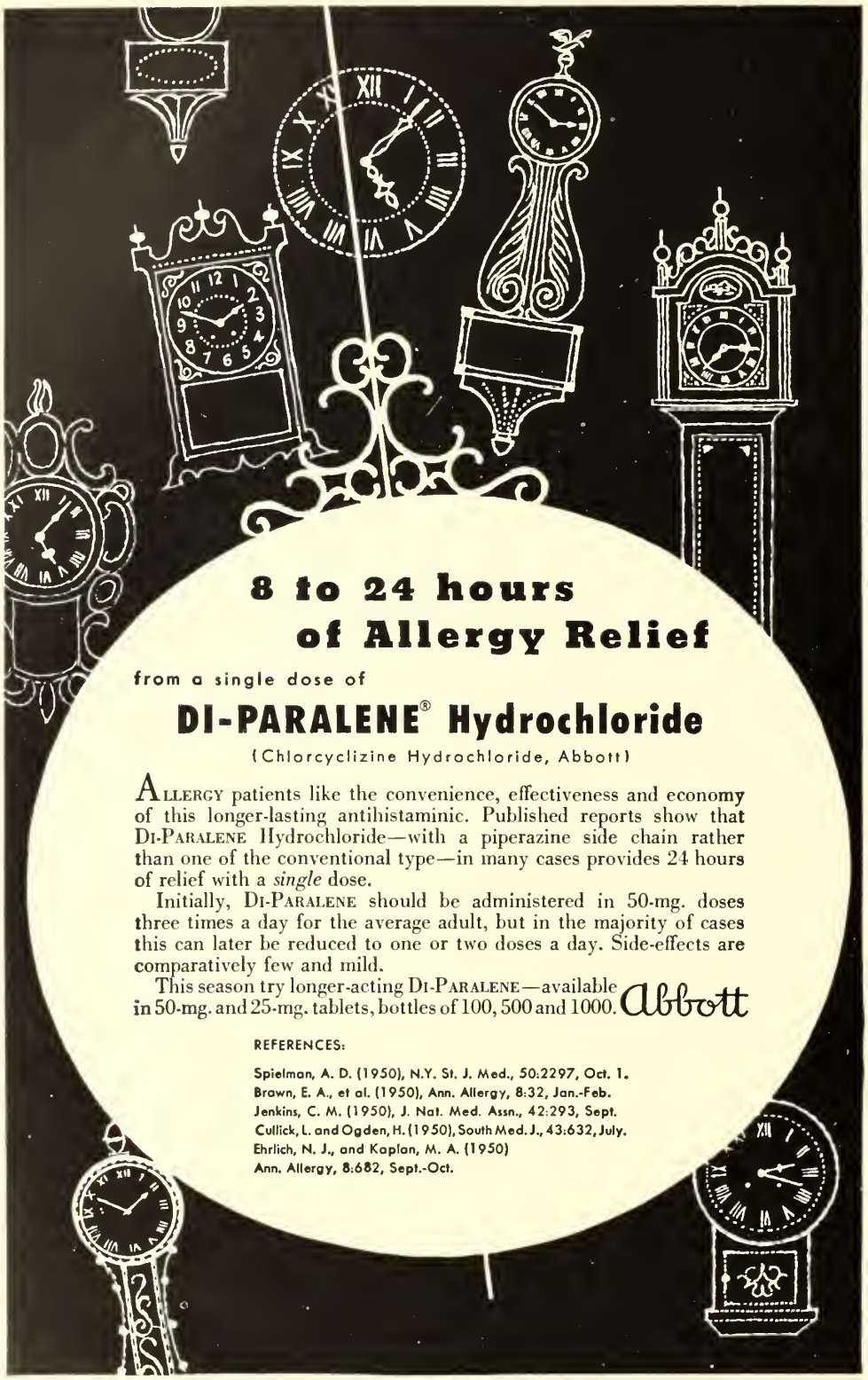
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[*This is the second of a series describing the successive steps in the treatment of the "Problem Drinker."*]

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REFERENCES:
Spielman, A. D. (1950), N.Y. St. J. Med., 50:2297, Oct. 1.
Brown, E. A., et al. (1950), Ann. Allergy, 8:32, Jan.-Feb.
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Ehrlich, N. J., and Kaplan, M. A. (1950)
Ann. Allergy, 8:682, Sept.-Oct.

should be a member of the school health council as well as of the community health council.

8. It is essential that teachers be aware of the physical condition of their pupils.

9. That each child be taught more and more to assume the responsibility for his own health.

10. Cumulative health records should be a part of the child's total school record throughout his school life.

11. There is need for better cooperation between schools and the medical profession.

12. That the parents and community be made aware of their responsibilities for better overall health by maintaining a healthful home and community environment.

Participants in the conference from Missouri were: Neil C. Aslin, Superintendent of Schools, Columbia; J. Russell Ellis, Superintendent of Schools, Canton; H. J. Haberaecker, Superintendent of Schools, Butler; R. O. Hawkins, Superintendent of Schools, Jackson; Harold G. Puckett, Superintendent of Schools, Savannah; Pattric Ruth O'Keefe, American Association for Health, Physical Education and Recreation, Kansas City; F. E. Wolverton, State Department of Education, Jefferson City; Freda K. Parks, R.N., State Department of Education, Jefferson City; Ray McIntyre, Missouri State Medical Association, St. Louis; H. E. Petersen, M.D., Missouri State Medical Association, St. Joseph; Wm. M. Hartnett, Missouri Tuberculosis Association, Caruthersville; and Cecilia Conrath, Health Educator, USPHS, Kansas City.

COUNCILOR DISTRICT NEWS

SECOND COUNCILOR DISTRICT

W. F. FRANCKA, HANNIBAL, COUNCILOR

Chariton-Macon-Monroe-Randolph County Medical Society

The Chariton-Macon-Monroe-Randolph County Medical Society met at the Woodland Hospital, Moberly, on Thursday evening, March 13, for its regular monthly meeting.

Ben Senturia, M.D., St. Louis, was the guest speaker and discussed in interesting and practical fashion "Diseases of the External Ear Canal."

Twenty-two members and guests were in attendance.

C. C. COHRS, M.D., Secretary.

THIRD COUNCILOR DISTRICT

R. O. MUETHER, ST. LOUIS, COUNCILOR

R. Emmet Kane, M.D., Cyrus E. Burford, M.D., and Louis Rassieur, M.D., St. Louis, were presented plaques for the personal and professional accomplishments at the dinner meeting of the St. Louis City Hospital Alumni Association held in St. Louis on March 31.

SEVENTH COUNCILOR DISTRICT

VICTOR B. BUHLER, KANSAS CITY, COUNCILOR

Herbert L. Mantz, M.D., Kansas City, was the guest speaker at the annual meeting of the Chicago and Cook County Tuberculosis Institute on March 5 and spoke on "Tuberculosis Control in the Future."

Ira H. Lockwood, M.D., Kansas City, addressed the Radiological Society of Texas at Dallas, Texas, on February 23.

Michael Bernreiter, M.D., Kansas City, presented a paper at the Latin American Congress of Surgical Medicine in Panama on February 25 and spoke on "Auricular Fibrillation and Cardiac Failure."

EIGHTH COUNCILOR DISTRICT

W. S. SEWELL, SPRINGFIELD, COUNCILOR

Ozarks County Medical Society

On Tuesday evening, April 8, the Ozarks County Medical Society held a dinner meeting at the Park Casino, Monett, with the lawyers of the five counties which compose the Society as guests.

Mutual problems confronting the two professions were discussed by designated members of the legal profession present and by W. S. Sewell, M.D., Springfield, Councilor of the Eighth Councilor District.

The attendance of fifty-five lawyers and physicians and the many favorable comments made by repreentatives of both groups exhibited ample proof of the reception of this meeting.

NINTH COUNCILOR DISTRICT

J. H. SUMMERS, LEBANON, COUNCILOR

South Central Counties Medical Society

The South Central Counties Medical Society met for dinner at the El Patio Hotel, Cabool, March 19, with the following members and guests present: Drs. R. W. Denney, H. G. Frame, S. W. Connor and A. C. Ames, Mountain Grove; Farrett Hogg, Jr., Cabool; T. J. Burns and S. G. Kramer, Houston; M. B. Perkins, Willow Springs; T. R. Skaggs, Mountain View; E. C. Bohrer and Rollin H. Smith, West Plains; U. J. Busiek and E. B. Hanan, Springfield, and several of the wives.

Following dinner the ladies went to the home of Mrs. Hogg and the doctors met in Dr. Hogg's office.

Drs. Busiek and Hanan presented a case of splenic anemia in a family which they have watched for several years in three generations and especially in a boy during the first seven years of life. A general discussion followed.

The meeting adjourned to meet in Willow Springs on April 16.

A. C. AMES, M.D., Secretary.

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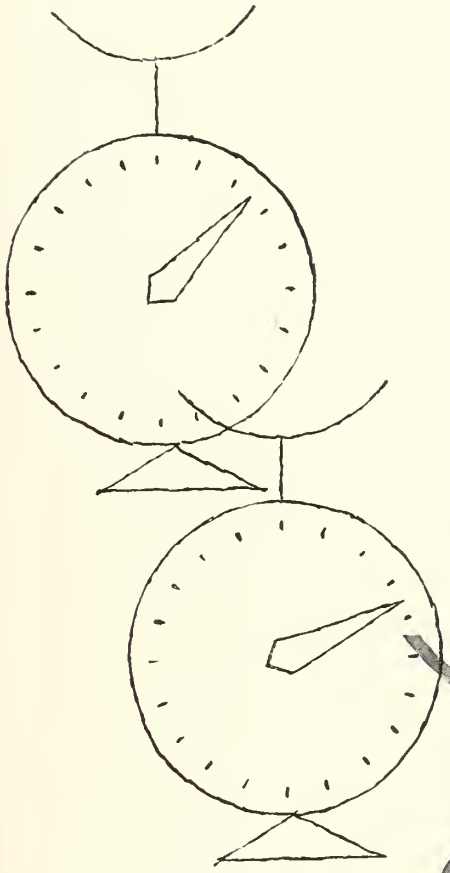
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1 Gardner, L. I., Butler, A. M., et al.: Pediatrics 5:228, 1950
2 Nesbit, H. T.: Texas State J. M. 38:551, 1943
3 Bull. National Research Council No. 119 Jan. 1950
4 Recommended Daily Dietary Allowances, Revised 1948, Food and Nutritian Board, National Research Council

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1. Greene, G. G.: Kentucky M. J. *50*:8, 1952.
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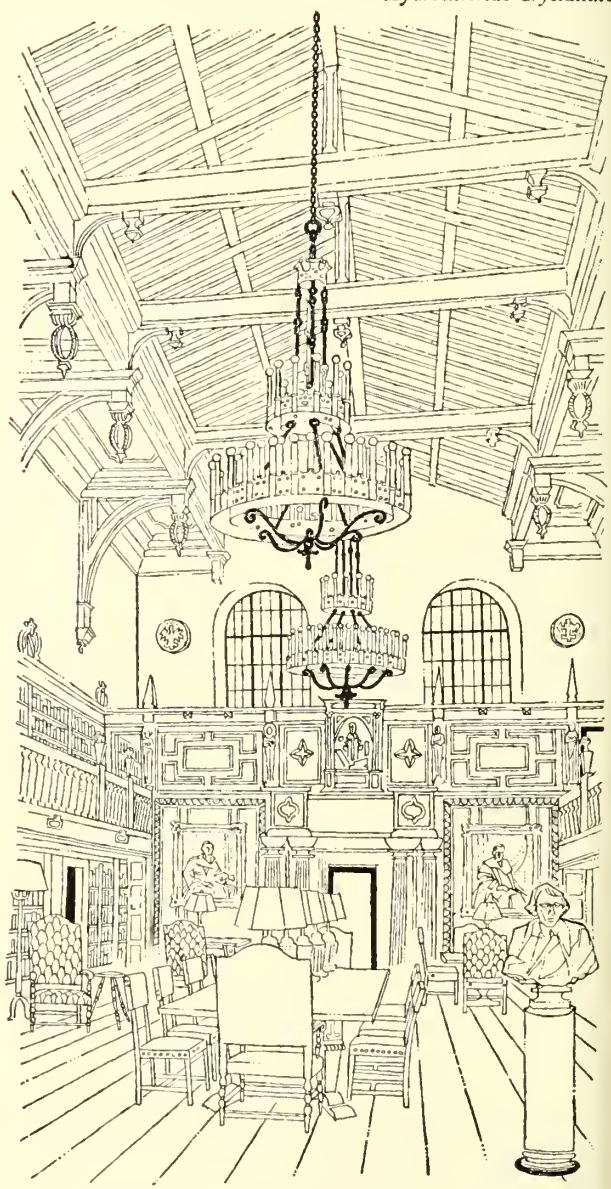
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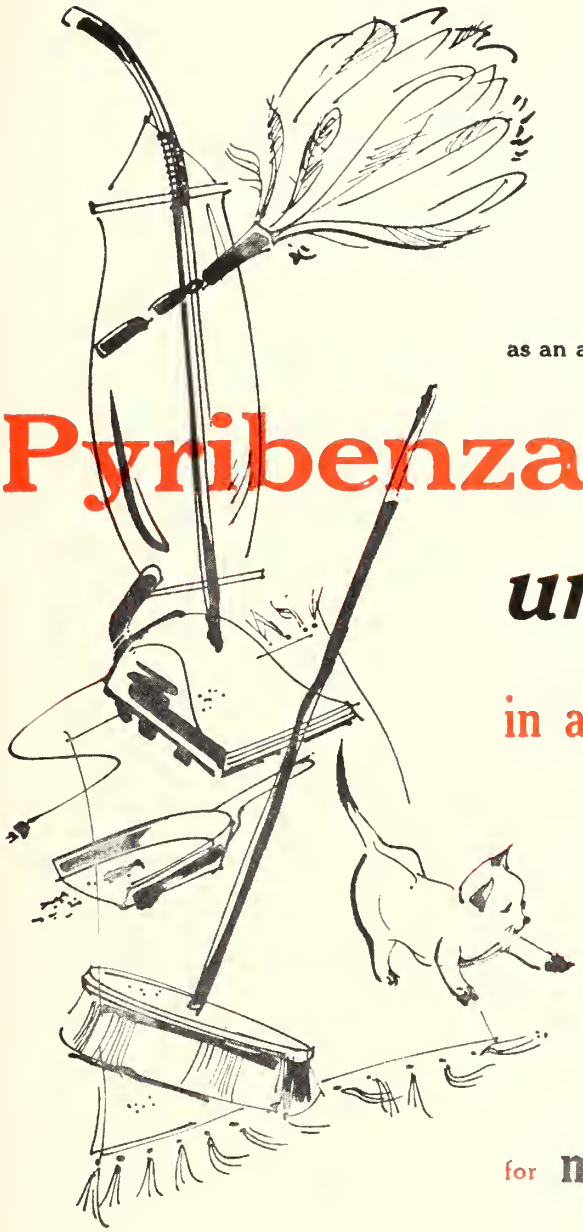
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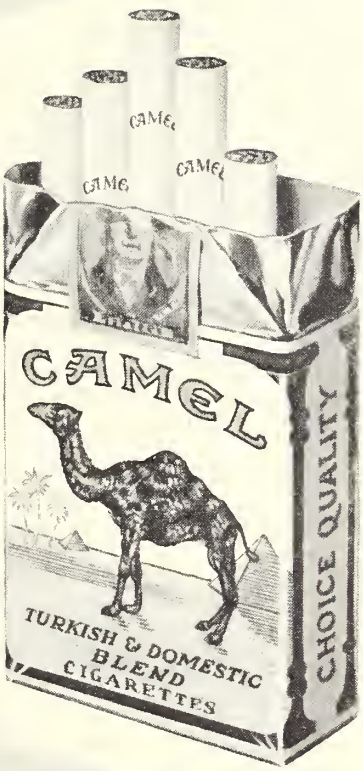
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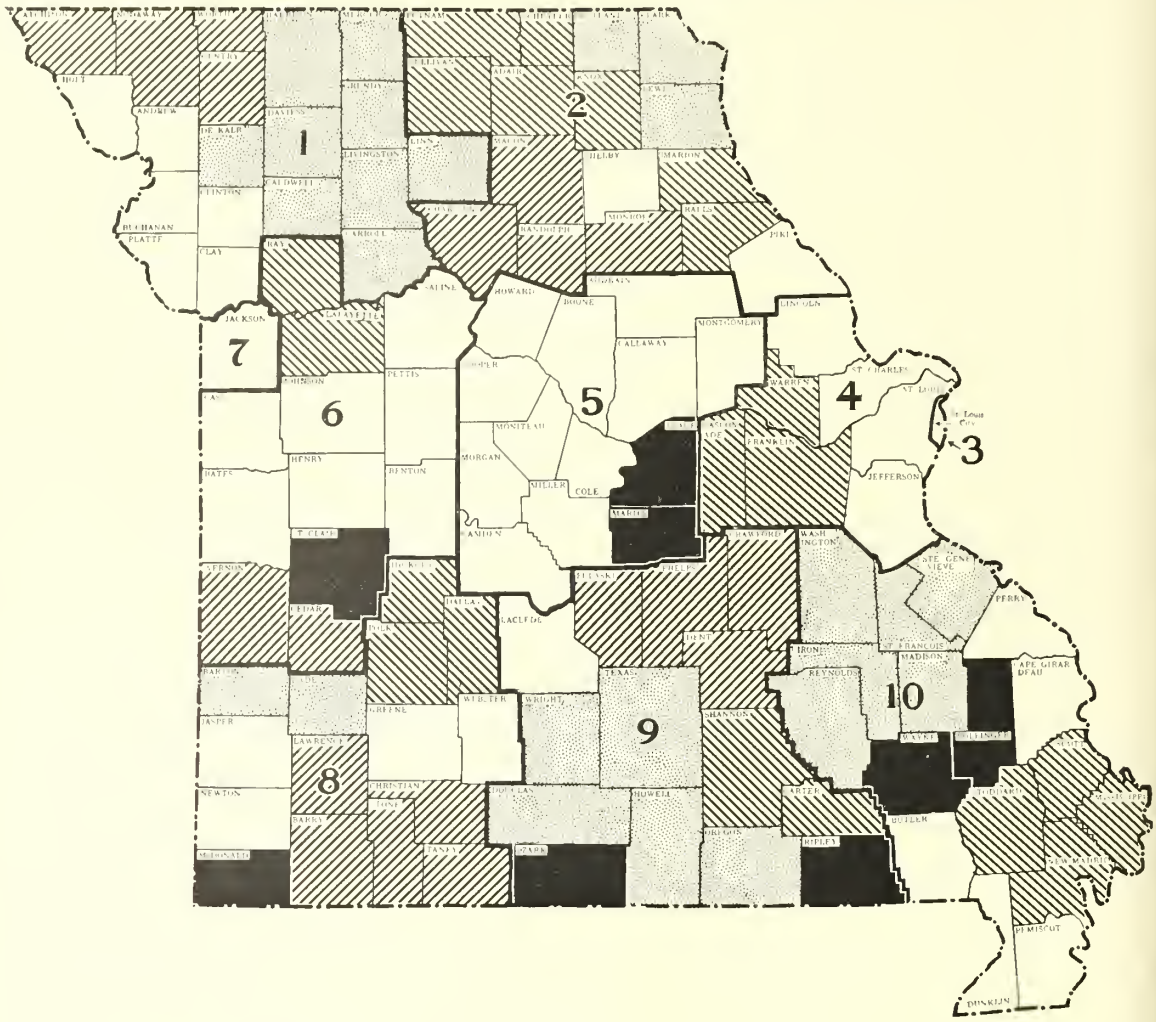
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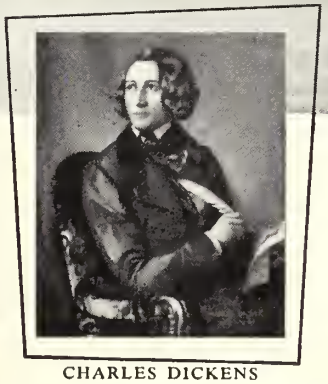
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* *Postgrad. Med. 9:106, 1951.*

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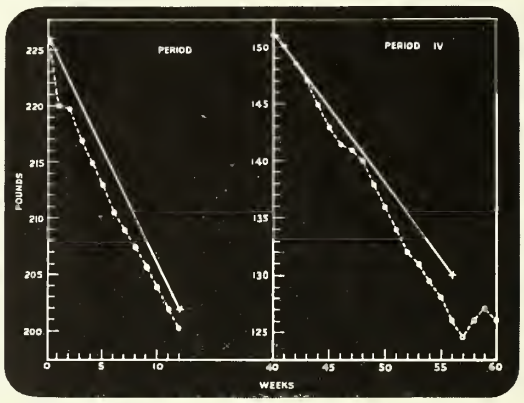


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Harvard Medical School, New England Jr. Med., vol. 241, No. 14, 1949, p. 529 ff.

Pathologically Speaking

Rh SENSITIZATION DURING PREGNANCY

APPROXIMATELY one out of two hundred deliveries yields an erythroblastotic baby due to sensitization in an Rh-negative mother by an Rh-positive fetus. The use of certain laboratory tests *at appropriate intervals* during pregnancy serves to alert the physician to the *possibility* that the child may be erythroblastotic, but even highly significant-appearing data do not allow the certain prediction of erythroblastosis.

I. At the first prenatal visit, determine:

1. The patient's Rh type.

2. If the patient is Rh-negative, determine husband's Rh type.

3. If the patient is Rh-negative and the husband Rh-positive, do a genotype on the husband's blood; if he is homozygous for Rh, the children should all be Rh-positive; if he is heterozygous, 50 per cent of the children may be Rh-positive and 50 per cent Rh-negative.

4. If the patient is Rh-negative, determine anti-Rh titer.

a. If she has had no previous pregnancies nor any transfusion (intravenously or intramuscularly) of Rh-positive blood any time in the past, she should not have Rh antibodies; those from the current pregnancy should not appear until after the fifth month of gestation.

b. If the patient has had no previous pregnancy but has had one or more transfusions any time in the past and if she shows Rh antibodies in the first five months of gestation, they are presumed to have been derived from Rh-positive cells which were present in the transfused blood. Due to such prior sensitization, these mothers may have an erythroblastotic infant in their first pregnancy.

c. If the patient shows Rh antibodies and has had previous pregnancies with Rh-positive babies, any antibodies present in the first five months of pregnancy are presumed to be residual from the sensitization during previous pregnancies.

II. At 34 weeks' gestation:

1. Determine anti-Rh titer.

2. Check for blocking (incomplete) antibodies (Coombs test). If either complete or incomplete antibodies have appeared or if the anti-Rh titer previously present has risen, it is evidence that the patient is carrying an Rh-positive fetus but not evidence that the child will necessarily have erythroblastosis.

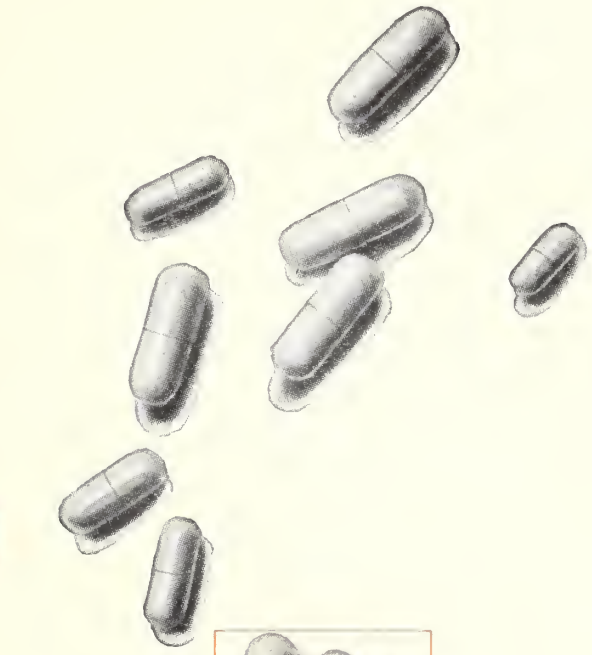
III. At 36 weeks' gestation:

1. Determine anti-Rh titer.

2. Check for blocking antibodies (Coombs test). If progressive antibody formation has occurred (i.e., higher titer), the *possibility* of erythroblastosis becomes stronger, and it then behooves the obstetrician to plan for the delivery of the mother and the immediate care of the infant as he would for an erythroblastotic case.

RALPH EMERSON DUNCAN, M. D.
LORAINE E. SCHULTZ, M. D.
ALBERT E. UPSHER, M. D.

Terramycin



CAPSULES



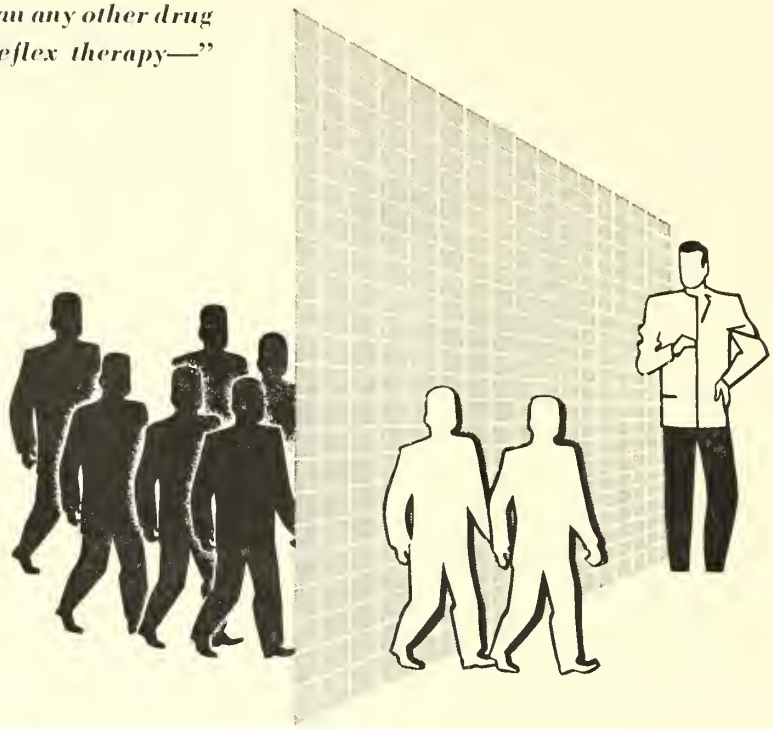
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Volume 49 June, 1952 Number 6

Scientific Articles

INDICATIONS FOR NEPHROPEXY

C. E. BURFORD, M.D.
J. E. GLENN, M.D.
AND
E. H. BURFORD, M.D.
ST. LOUIS

NEPHROPTOSIS has long been a controversial problem in surgery. It has been referred to as floating, ptosed, dropped, fallen and movable kidney. The operation for its cure has been both praised and condemned so that some urologists are still confused and in doubt as to its value. Because of this our experience since 1911 including 304 nephropexies are reported.

HISTORY

Movable kidney was first described by Franciscus de Pedemontanus in the fourteenth century. In 1841 Rayer pointed out that movable kidney caused definite clinical and characteristic signs and symptoms and that relief was obtained by bedrest or support by a belt or by both. In 1864 Dietl described the colic associated with nephroptosis, thereafter known as "Dietl's crisis." Early attempts by surgeons to fix the movable kidney resulted in such failure that from 1878 until 1888 the accepted method of management was nephrectomy with its greater mortality. Although many "cures" were obtained by this means, the vast majority of these nephrectomized kidneys were found to be normal. In 1895 Albarran reviewed 374 cases of nephropexy from the literature including fifty-six of his own, which review showed an operative mortality of 1.1 per cent and proved the benign nature of the procedure. This fact invited a wave of popularity with its widespread failures which threw the entire operation into disrepute. More sincere advocates of nephropexy, however, over the years have added refinements of diagnosis, proper selection of cases and surgical technics which once again establish the procedure a definite position in urologic surgery.

From the Department of Urology, St. Louis University School of Medicine, St. Louis.

ETIOLOGY

The usual excursion of the kidney varies between one and one and one-half vertebra widths but has been seen to traverse a distance of three vertebrae without producing symptoms or pathologic condition. Many conditions are known to predispose or produce symptomatic nephroptosis, to mention some: (1) a sudden or large weight loss, (2) multiple childbirth, especially in borderline cases, (3) congenital conditions, (4) occupational hazards, (5) acquired or developmental conditions making a kidney large and heavy, (6) adhesions from previous surgery, (7) the upright position of man.

Material for this report consists of 711 cases from private practice in which the diagnosis of symptomatic nephroptosis had been made with complete retrograde pyelograms and which required either low abdominal support with central pad or surgery for relief of symptoms. Operative cases numbered 304, from which the following statistics are derived. Females in this series outnumbered males better than two to one. A comparison of sex to age shows the most frequent ages in the female to be in the third decade while in the male the second decade.

In a study of sex and predominate side involved, it was found the right side affected in both sexes almost four times as often as the left. In the male the right side was involved twice as often as the left, while in the female this ratio was almost five to one. Nephropexies were performed bilaterally in nine cases, two in men and seven in women.

SYMPTOMS

The chief symptoms noted in order of frequency were:

Backache including Dietl's Crisis, 173
Bladder symptoms, 34
Nausea and vomiting, 32
Gross hematuria, 26
Weight loss (excess 20 pounds in 6 months), 23
Pyelitis with chills and fever, 21
Has passed urinary calculi, 6

Of 163 cases in which the duration of symptoms was quoted, only 78 or 48 per cent had symptoms

of one year or less. The remaining 85 or 52 per cent had symptoms in excess of one year and two cases had had their malady for twenty-five years.

DIAGNOSIS

Evaluation of nephroptosis is determined by the symptoms and physical examination including cystoscopy and pyelograms at which time the following are noted:

1. Ureteral obstruction or patency.
2. Retention of urine in renal pelvis.
3. Renal infection.
4. Phenolsulphonphthalein determination.
5. Flat x-ray film.
6. Contrast pyelograms (supine and upright).
7. Delay in emptying by intravenous urograms.
8. Recognition or exclusion of abdominal or pelvic conditions which might simulate symptoms or produce urinary tract pathologic condition.

A typical uncomplicated nephroptosis case usually gives a history of pain in the flank or ache in the back associated with the affected side, when the condition is unilateral. The pain may vary from a persistent dull ache or dragging to colicky attacks as Dietl's crisis precipitated by erect posture of either short or long duration. These attacks usually are relieved by lying down or wearing a low abdominal support. In a few cases backache or pain may be absent altogether or masked by more prominent symptoms secondary to a nephroptosis or by an associated condition referable to the affected kidney or coexisting with it. The physical examination may or may not reveal a readily palpable, painful and movable kidney. By far the most important diagnostic procedure is that of the supine and upright retrograde pyelogram. The supine pyelogram should be taken with patient in maximum expiration and upright pyelogram in maximum deep inspiration. A word of caution should be made at this point in thoroughly evaluating the presence and condition of the opposite kidney before being swept away in a wave of eager enthusiasm to correct an obvious symptomatic nephroptosis. It is important to remember that asymptomatic nephroptosis per se without impairment of renal function had best be left alone but observed periodically. Another diagnostic aid may be the relief the patients get from pain when a ureteral catheter passes the point of obstruction and drains the kidney of pent up urine. Conversely, when this pain is not present, it may be reproduced by slightly overdistending the suspected side with pyelographic media. Of equal importance to the upright pyelogram is the ureterogram which is obtained simultaneously by injecting opaque media as the catheters are withdrawn to the lower portion of the ureters. An accurate estimation of the phenolsulphonphthalein appearance time and output should be determined. The diagnosis of symptomatic nephroptosis should not be followed by renal fixation until all differential diagnoses have been eliminated or corrected.

DIFFERENTIAL DIAGNOSIS

The various conditions which might confuse the diagnosis of nephroptosis by virtue of temporary similarity in symptom complexes just about comprise the entire gamut of pathology. Some of the more common ones are cholecystitis or cholelithiasis or both, appendicitis, ectopic kidney, abdominal or pelvic tumors, psychoneurosis.

Some twenty patients had previously had appendectomies without relief of symptoms. Three cholecystectomies and a salpingo-oophorectomy failed to help others. Three cases had had faulty nephropexies elsewhere. One case had had seven abdominal operations without relief. It must be borne in mind that one or more of these conditions may coexist with symptomatic nephroptosis. Two such cases were relieved of their acute appendices before nephropexy was performed.

TREATMENT

The criteria for nephropexy when nephroptosis is not relieved by nonsurgical methods are the persistence of any one of the following signs and symptoms:

1. Pain.
2. Hematuria.
3. Hydronephrosis.
4. Diminishing phenolsulphonphthalein.
5. Infection.

Most patients subjected to operation for nephroptosis should have a trial of an inelastic belt or corset for several weeks. The support should be low, the upper limits of which should not be above the level of the umbilicus. In addition, for slender individuals, a central pad about the shape and thickness of the hand should be inserted inside the support anteriorly. This palliation assists in eliminating the psychoneurotic type of patient who is rarely benefited by any kind of surgery.

More frequently the nephroptosis has been associated with other obstructive lesions such as calculus (thirty-seven cases), abberent blood vessels (eleven cases), congenital conditions such as abnormal ureteral insertion (three cases) and double kidney (three cases), severe fibrous bands (ninety-nine cases), and redundant or megaloureter or both (six cases). Plastic repairs of hydropelves were performed on twenty-four cases. There were ten nephropexies performed on patients who had but a single kidney and seven in preparation for nephrectomy on the opposite side. One case of nephropexy was performed on a polycystic kidney.

The actual technic consisted in placing three triangular mattress sutures (after Kelly) of No. 2 black silk usually along the greater curvature of the kidney so that it would lie when elevated in the most natural position for efficient drainage. The uppermost was placed through the twelfth intercostal muscle and its fascia, the middle

through the arcuate ligament and the inferior through the fascia and fibers of the quadratus lumborum muscle.

We feel that the patient should have shoulders flat for two weeks to insure time for healing of the fixation and success of the operation. Patients with additional symptoms resulting from non-urinary tract pathologic conditions should not expect relief from all symptoms but only from those produced by nephroptosis. Nephropexy will not cure general visceroptosis but it will prevent Dietl's crisis and preserve renal function.

RESULTS

Seven hundred eleven cases of nephroptosis are reported. There were 304 nephropexies performed. There was one operative death occurring two months after nephropexy in 1929. The patient had a severe ptosis with a stone in the pelvis and an unrecognized renal tuberculosis. A month after renal fixation and pelvolithotomy a diagnosis of tuberculosis nephritis was made and nephrectomy performed. She died a month later of tuberculosis meningitis. This represents an operative mortality of .3 per cent.

Patients cured by this method number 284 cases or 93 per cent. Those improved were seven cases or 2 per cent and these are all pyelographically cured but still complain of some degree of discomfort on the affected side. Failures number thirteen or 4 per cent including the single death cited. Four of these cases were nephrectomies four months, one year, seven years and fourteen years after nephropexy. Two failures were reoperated upon with successful outcome. Six cases developed a stone in kidney, pelvis or ureter one and one-half, three, three, four, six and eleven years later, three of which were successfully removed without further recurrence.

TABLE 1. *Results*

Year	Nephropexies	Failure	Per cent Failure	Per cent Cure
1911-1920	4	1	25	75
1921-1930	106	5	5	95
1931-1940	98	4	4	96
1941-1950	96	3	3	97

Postoperative cystoscopic check-up on 161 cases demonstrated the kidneys operated upon to be in high position for adequate drainage.

CONCLUSION

Nephropexy in properly selected cases is a beneficial procedure relieving symptoms and preserving renal function.

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TREATMENT OF ACNE VULGARIS

EXPERIMENTAL USE OF CORTISONE IN ACNE AND IN ROSACEA

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THE CAUSE of acne vulgaris is ill understood despite the commonplace incidence of the disease and the quantity of thought and investigative effort which have been expended on its problems. I believe it is scarcely debatable to state that acne represents a glandular disorder wherein the sebaceous glands are the seat of the clinically conspicuous dysfunction. Sebum accumulates within enlarged glands or their ducts. Inflammation, plausibly interpreted as being of the foreign body type,[1] appears about the sebum. Purulent sloughing follows and pitted scars spontaneously ensue. If parasites appertain to this process, they serve only as secondary invaders, and this they may do; but the hypothesis has long been laid to rest that acne is primarily a manifestation of parasitism.[2] It is a chemical, metabolic, glandular abnormality.[3]

If the fat glands of the acneic patient could be got small and empty, he would no longer have acne. Treatment directed at the aim of making the glands small and empty may well include the following measures: (1) external cleansing with soap or detergents, a superficial effort which helps a little, maybe, but which may bruise and injure sore tissues; (2) dieting, eliminating especially milk, ice cream, chocolate, nuts, popcorn and an excess of the lipochrome pigment substances of oranges and tomatoes, and this helps quite a bit but does not of itself assure a cure; (3) administration of thyroid,[4] which helps greatly in most cases but not in all, its benefits being attributable to its influence on fat metabolism, although this effect is probably not a full explanation; (4) x-ray therapy, which yields

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dependable improvement, to be attributed to the necrobiotic influence of radiation on glandular epithelium (I have heard it said that "Any treatment for acne is good treatment if it includes x-ray therapy"); (5) topically applied astringents and exfoliating agents, generally incorporating sulfur, and these have in my opinion limited virtue, being variously assessed by various authorities; and (6) evacuation of pustules and extraction of comedones, the minor surgery of acne which is indubitably beneficial if skillfully done, but it cannot be more than palliative in that, while débridement gets sebum out of the skin, thereby anticipating foreign body reaction to it, surgical effort cannot prevent the reappearance of the irritating lipids.

There are further measures which can be used to the advantage of certain acne patients. I disclaim originality regarding the following procedures, but I have used them and so can evaluate them from first hand knowledge: (7) giving an iron, vitamin and liver extract preparation such as Perihemin[R] or Redicyte,[R] and this I believe is really helpful. Sutton, Sr.,[5] recommended liver therapy in 1927, and Marshall[6] has been keenly interested in this aspect; (8) eliminating focal infection,[3, 7] in some cases where secondary parasitism is troublesome; (9) combatting secondary parasitism with (a) an attack upon seborrheic dermatitis of the scalp, prescribing for example a salve to be applied overnight once a week and removed by shampooing the next day, containing 3 per cent sulfur and 5 per cent salicylic acid in Carbowax 1,500; (b) an attack upon bacteria internally with such agents as penicillin by injection, or terramycin, sulfonamides or such by mouth[7]; (c) an attack upon bacteria externally with an antiseptic—and I think highly effective a mixture of Vioform Cream[R] with 20 mg. of sulfur and 3.3 mg. of chloramphenicol per gram, to be rubbed into the skin at bedhour nightly or less frequently if it irritates; and finally (10) giving estrogenic substances in some cases.

The patient who improves on estrogen is generally the girl whose milia are deep, whose pustulation is comparatively scanty, whose skin is dry and looks as if vitamin A might help (but it seldom does, in my experience), and whose response to thyroid yields less than the expected improvement. With estrogens in the male patient, my experience, while admittedly scanty, is disappointing. Andrews and collaborators[7] either would administer diethylstilbestrol 0.25 mg., more or less, daily, or would administer one or more capsules daily containing diethylstilbestrol 0.25 mg. and thyroid 8.0 mg. (one eighth grain) along with cascara and sodium bicarbonate. Their report stressed the value of estrogenic therapy and played down the value of thyroid, while unexpectedly[7, 8] they depreciated the utility of x-ray therapy. I am reluctant to give an estrogenic substance to every patient, especially to the half of them who are males. The report of Smith and collaborators[9] confirmed the contention of mine,[1] based on clinical rather than laboratory observations, that hypothyroid low metabolism is present in a high proportion of acneic patients. In my opinion one eighth grain of thyroid is an insignificant daily dose. If a patient needs thyroid at all, he needs at least four to eight times that much. Sutton, Sr., many years ago might have accredited the cascara content of the Andrews' acne capsule with significant powers. He has been quoted as having said that "Cascara worked well in his hands." The constipation of acne patients does in fact respond to thyroid properly given.[4]

There are many other things physicians do to people with acne that I shall not discuss. Omissions are intentional, for I have mentioned the procedures I have found to be beneficial. I do not regard with favor such measures as ultraviolet light treatments, solid carbon dioxide in acetone, foreign protein injections, face peeling and the like. Chloracne is omitted from discussion here.

"If the fat glands of the acne patient could be got small and empty"—this insistent thought gave a peculiar emphasis to the experience of a patient of Dr. Mahlon Delp's at the University of Kansas Medical Center in 1950, a woman with large and disfiguring eruptive xanthomata about the finger joints and elsewhere. While not diabetic, she had hyperlipemia, and neither this chemical finding nor the disease itself improved on low fat diet and the administration of thyroid. Dr. Delp gave her cortisone, whereupon her lipemia diminished markedly toward normal, and her lumps resolved quickly and to a considerable extent. What would cortisone do for acne, a disease I have called, for reasons which seem as cogent now as in 1941,[1] a pustular lipoidosis?

A supply of Cortone[R] to pursue the investigation was generously granted by Merck and Company, Incorporated. The records follow of three difficult cases of acne, and one extreme case of rosacea.

REPORT OF CASES

Case 1. A 22 year old white female, a stenographer, had been under treatment for acne since September 1949. Her acne was of a scarring, deep type. She was given thyroid, and the dose which seemed best was 1 grain per day. She was carried on this dose for many months, and her weight remained close to 108 pounds. Between September 1949 and December 1950 she was given x-ray therapy which totaled 1450 r, but she persisted in having deep, sore, acneic nodules. On March 19, 1951, there were five such tender cystic lesions on her face. The total blood fat by a modification of the Bloor method* was 1,153 mg. per cent. The patient took cortisone, 25 mg. three times daily until she had consumed forty tablets. On March 30, 1951, while still on cortisone, her total blood fat was 806 mg. per cent. Her weight was unchanged, she felt well,

* Chemical analyses were performed in my laboratory by Jeannette S. Carter, Ph.D. We consider about 600 mg. per cent normal.

there was only one nodule of tender inflammation in her face and she was judged to have manifested moderate improvement. Off cortisone, she subsequently relapsed.

Case 2. A 16 year old white male, a high school student, started treatment for acne in March 1949. The case was severe, with numerous large comedones and pustules. He was stabilized and was symptomatically improved on thyroid on a dose of 2 grains per day, and that dose was maintained for many months. Between September 1949 and May 1950 he took Stilbestrol 1 mg. per day for ten days at a time, rested ten days and resumed Stilbestrol for ten days. He seemed somewhat improved while on this drug. X-ray therapy was given from the start, and by March 1951 the affected regions had received a total dose of 1,550 r. Nevertheless, he continued to have numerous pustules and marked seborrhea. On March 19, 1951, he weighed 166 pounds and the total blood fat was 750 mg. per cent. Cortisone, 25 mg. three times a day was given until he had consumed forty tablets. On April 2 he weighed 168 pounds, felt much brighter and more vigorous despite his having continued on the same dose of thyroid throughout the experiment (thyroid had not made him bright and vigorous as cortisone did), had a total blood lipid level of 620 mg. per cent, and showed moderate improvement with respect to his acne. Off cortisone he relapsed to his previous level of acneic activity, and on May 15 was given eighty more tablets to be taken three a day. His total blood fat on May 15, 1951, was 627 mg. per cent. On June 11, after eighty cortisone tablets had been consumed, it was 533 mg. per cent, and the patient had shown considerable improvement. Off cortisone, he subsequently relapsed.

Case 3. A 25 year old white female, a clerical employee, had deep scarring acne when first seen in October 1949. The thyroid dose on which she was balanced was 3 grains per day and was continued for many months. During September 1950 intramuscular injections of an aqueous suspension of estrogen in a dose of 2 mg. weekly resulted in no benefit. X-ray therapy had been given to this patient prior to her coming under my care, and, while the dose was unknown to me, her face looked as if it had received all the x-ray therapy it was wise to give and I gave her none. On March 12, 1951, there were numerous deep acneic pustules. The total blood fat was 580 mg. per cent. Cortisone was started, 25 mg. three times a day, for forty doses. On March 26 she showed slight and dubious improvement, and the total blood fat was 573 mg. per cent.

Case 4. A 32 year old housewife exhibited extreme rosacea, the entire face being bright red with tiny, shallow papules. She stated the condition had been unchanging and recalcitrant to previous medical effort during the preceding ten years. Otherwise apparently in sound health, and with three healthy children, she had a blood pressure of 100/70, had no appetite for breakfast, and habitually consumed twelve cups of coffee, more or less, per day. Such a person appeared eligible for thyroid administration, for hypothyroidism is frequently masked by habitual excessive ingestion of caffein, which palliates hypothyroid symptoms of fatigue and sluggishness. I reduced her intake of caffein to one cup of coffee daily and put her on thyroid, which she tolerated in a dose of 1 grain per day. Her red blood cells numbered 4,200,000, her hemoglobin was 11.1 gm. per cent (75 per cent), and her total blood fat was 1,160 mg. per cent on June 23, 1951. There had resulted hitherto no clinical response to topical therapy including a sulfurous astringent and x-rays, or to dietary restriction (low fat, low carotinoid diet) or to thyroid. She was given forty cortisone tablets, 25 mg. each, to be taken at the rate of three per day. Within two weeks, when seen on July 7, the improvement was noteworthy. Her blood pressure was 116/78, and total blood fat was 780 mg. per cent. The red blood cells remained close to 4,000,000 with hemoglobin 12.0 gm. per cent. The face was almost clear. She had not looked so well at any time in ten years. Subsequently an extremely strict diet, low in fat, was tried, but without cortisone she gradually relapsed. Therefore cortisone was resumed, again with conspicuous benefit, and x-ray therapy was continued until the total dose reached 850 r. After September 1, she no longer relapsed when cortisone was withdrawn, but remained clinically in excellent condition. The improvement of this patient on cortisone was remarkable.

These case reports indicate the possible veracity of a generalization, that, when the total serum lipid is high, the administration of cortisone will lower it toward normal. Cortisone did this in cases 1, 2 and 4, in which thyroid had failed to do so. In case 3, the quantity of serum fat was normal to begin with, and cortisone did not reduce it. In the three patients whose high serum fat levels were reduced by cortisone, clinical improvement took place. The improvement in acne was temporary, partial, gradual, to be assessed in such terms as "50 per cent improvement," and was contingent upon the continued administration of the drug.

While it has long been believed that hypercholesteremia does not play a part in acne,[10] Kalz[11] reported that the serum lipids of thirty-four acne patients were not significantly different from normal before or after a test fatty meal, their increase of lipid after the meal being within normal limits. The cholesterol esters were significantly lower and the free cholesterols were higher in his acne patients than in his controls. He tabulated the total serum lipids in fifty acne patients, whose average was 690 mg. per cent, and in ten normal controls, whose average was 616 mg. per cent. The difference between these averages, 74 mg. per cent, is 12 per cent in excess of the average "normal" figure. Curiously he did not consider this significant. Two of my patients had markedly elevated total serum lipid levels, but fractional fat studies were not done in them. I do not doubt that there is something wrong with the fat chemistry of acne patients.

Cortisone therapy of acne, beneficial in two of three especially difficult cases, and cortisone therapy of rosacea, dramatically beneficial in one extreme case, is obviously experimental therapy, not to be recommended for general usage. That it did no harm in these patients—and it did not—is no guarantee that it might not harm some persons. I have harmed people with cortisone. For example, two dermatologic patients, not acneic, have under my supervision suffered hemorrhages from quiescent and forgotten peptic

ulcers—such errors I am not likely to repeat. I desire not to be construed as recommending cortisone for the treatment of acne or rosacea, saving for experimental investigation. While ACTH may cause acneiform dermatitis medicamentosa, I have not seen cortisone do this.

SUMMARY

Acne is described as such a disorder of glandular function and of fat chemistry, clinically conspicuously affecting the sebaceous glands, that a rational plan of treatment should be directed at endeavoring to get the fat glands small and empty. This can be accomplished with considerable success by means of diet, thyroid, acne surgery, x-ray therapy, iron and vitamins and perhaps estrogenic substances.

Cortisone was administered experimentally to three difficult cases of acne. In two of them with hyperlipemia previously unresponsive to thyroid, cortisone reduced the total serum lipids and temporarily improved the acne, but not to a great degree. In one without hyperlipemia, cortisone was without beneficial effect.

Cortisone was administered experimentally to one extreme case of rosacea. In this patient, whose hyperlipemia had not been responsive to thyroid, cortisone reduced lipemia and the patient obtained dramatic and lasting improvement.

The value of cortisone in acne and in rosacea is dubious when judged alone by the data here presented, which report is not a recommendation of the general use of the drug in these diseases.

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LUMBAR SYMPATHECTOMY FOR ARTERIOSCLEROSIS OBLITERANS—RESULTS IN 150 CASES

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The purpose of this paper is to evaluate lumbar sympathectomy in the management of lower extremities involved by the complications of arteriosclerosis obliterans. The material studied to form the basis of the report consists of 150 such lower extremities treated by sympathectomy in 125 patients since 1946.

Since the initial reports of such trials by Harris[1] in 1935 and Leriche and Fontaine[2] in 1936, additional reports have supported the evidence of the beneficial results obtained by sympathectomy in this malady, not by any apparent alteration on the disease process but rather by improvement in maximal utilization of the remaining arterial lumina. Still other reports have substantiated the beneficial effects and have elaborated further on possible dangers and on selection of cases.[3, 4, 5, 6, 7, 8, 9, 10, 11]

Despite these reports there has been reluctance on the part of those without large personal experience to accept the recommendations of sympathectomy for management of a disorder which medical precept has long contended is the result of rigid changes in arteries which are devoid of vasospastic capabilities and, therefore, theoretically refractory to improvement by sympathectomy such as is generally obtained in causalgia and Raynaud's disease.

CLINIC MATERIAL

The 150 extremities (in 125 patients) treated by lumbar sympathectomy in this series all presented complications of advanced sclerosis. Most of them were involved with severe pain and infection (chronic ulcer, cellulitis or frank gangrene). A smaller group presented pain only and this varied between claudication after walking from one to two blocks and continuous burning pain. The clinical sign common to all was absent arterial pulsation. The posterior tibial and dorsalis pedis arteries were the commonest affected while popliteal and femoral arteries also were affected in others.

The general physical status was poor in many, some having been admitted to the hospital with cardiac failure while others had histories and residuals of coronary disease, renal disease and previous strokes. If the general condition could be improved so that the prognosis for survival was good, sympathectomy was not interdicted for the management of the leg disease. Some of these

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patients clinically had evident gangrenous or pregangrenous changes in such proportions as to suggest futility of any procedure short of leg amputation, but sympathectomy was given a trial first.

Of the 125 patients, 95 (76 per cent) were males and 30 (24 per cent) were females, the ratio being almost five males to one female. Thirty of the patients were diabetic patients and in this group the sex ratio was one to one. The overall average age was 72 years ranging from 40 to 82 years, while among the thirty diabetic patients the average age was 60 years, ranging from 40 to 88.

The distribution of sympathectomy through the years 1946 to 1951 were as noted in table 1. Thus it is seen that the follow-up for most has allowed a period of years though some in the recent months have been followed for as little as two months.

TABLE 1. Distribution by Year

1946	22
1947	37
1948	19
1949	14
1950	35
1951	23
Total	150

Results have been classified as follows (table 2):

TABLE 2. Results of Sympathectomies

Result	No. of Cases	Per Cent of Cases
Excellent	76	50
Good	23	15
Fair	14	10
Benefited	37	75
Poor		25
Not Benefited	150	25
		100

Excellent.—Those whose symptoms and signs have improved sufficiently to permit return to ambulation without further serious complication.

Good.—Those whose return to ambulation has not been prompt because of delays in healing of ulcers or minor amputation wounds but who have made progress without further serious complications.

Fair.—Those who have been partially improved and have been spared major amputations though chronic infection or pain or both have persisted for protracted periods.

Poor.—Those who were improved temporarily but have developed recurrence of complications; and those who were not improved at all, some of whom were subsequently subjected to major amputations.

No patient of this series was made worse by sympathectomy. In other words, the paradoxical response elsewhere reported was not encountered.

OPERATIVE MORTALITY

Despite the fact that age, remote or recent history of cardiac, brain or renal disease, and presence of infection in the extremity were not considered to be contraindications to sympathectomy, and the general condition of these patients was only fair or poor in many instances, there was only one operative death, an operative mortality incidence of 0.66 per cent. Most of these operations were performed by resident and assistant resident surgical staff of the St. Louis City Hospital. The single operative death resulted from a technical accident in which two Deaver retractors were permitted to make contact and pinch a hole in the vena cava. The vessel was incompletely sutured and a pack inserted for pressure. The patient came to autopsy examination twenty-four hours later and presented further evidence of continued retroperitoneal hemorrhage.

MECHANISM IN RESULTING IMPROVEMENT BY SYMPATHECTOMY

In an attempt to explain the beneficial results in 75 per cent of these cases treated by sympathectomy the following premises appear to be tenable.

Relief of pain.—While it is still commonly stated that afferent fibers are not present in the sympathetic nervous system, cogent evidence to the contrary has been presented by Kuntz who recently reviewed his previous observations, demonstrated anatomically and physiologically in experimental animals, and presented further scientific evidence of afferent innervation of peripheral blood vessels through sympathetic trunks.[12] According to Kuntz these fibers are not distributed to the skin and the muscles of the extremity but appear to be distributed chiefly in relation to blood vessels. Thus the relief of pain of vascular origin following sympathectomy appears to result from the section of pain conducting dorsal root fibers which traverse the sympathetic trunk.

Improvement of arterial circulation in the sympathectomized arteriosclerotic extremity.—Since facts testify to the circulary improvement, it is no longer tenable to cling to the theory that arteriosclerotic extremities cannot so be improved because vasospasm is not a factor. In view of substantial facts, vasospasm obviously is also a factor in diminishing arterial supply. Exactly how improvement is gained is not certain but it is suggestive that sympathetic responses to arteriosclerotic ischemia produce vasospasm in collateral as well as central arteries and arterioles, thus establishing a vicious cycle. The relief of such sympathetic impulses, while obviously not reducing arteriosclerotic thickening but apparently by relieving vasospasm, permits additional arterial and arteriolar area that may mean the difference between tissue death and tissue life. Or as de Takats[6] suggests, "The excellent results obtained may be due to the release of normal

vasomotor tonus, which in turn insures an even blood flow uninfluenced by anything but the metabolic needs of the tissues."

SUMMARY

The following statements may be made on the basis of these experiences in 150 lumbar sympathectomies for arteriosclerosis obliterans.

1. Lumbar sympathectomy is a safe procedure in the group of patients who have generalized arteriosclerosis and its complications if the general physical status is fair.

2. Lumbar sympathectomy is not dangerous from the potential of worsening circulation in an arteriosclerotic extremity. From reports of this result in the literature it remains questionable whether in those instances major amputation would not have soon become mandatory anyway.

3. Ancillary treatment must not be neglected if optimum results of sympathectomy are to be obtained. These include correction of nutritional and blood deficiencies and local as well as systemic treatment of infections and gangrenous tissues. Debridement and minor amputations must be performed when indicated. Blood volume deficiency exists in many of these patients and should be corrected by transfusions of whole blood.

4. Lumbar sympathectomy was of distinct advantage in 75 per cent of 150 extremities afflicted with advanced arteriosclerosis obliterans. In the 25 per cent which were not improved, none was made worse by the procedure.

5. The improvement probably results from two factors, the sectioning of the afferent nerve fibers present in the lumbar sympathetic chain and the relief of vasospasm present in both primary and collateral circulation to the extremity.

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GERIATRICS: PHARMACOLOGY IN THE AGED

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THE PROBLEM of the older patient is one of increasing importance. Many statistics are available which prove that the age of the population is increasing rather rapidly. The problems of caring for these people are numerous and their place in wartime economy is of great importance as a source of additional man power. In old age, anatomic structures, relations and functions are altered. It is often said that over-enthusiastic treatment of these people will maintain the supply of autopsy material so that without being a therapeutic nihlist, one might safeguard these individuals by the things one does not do for them. Since there are multiple diseases in the aged, one cannot attempt to treat them all. It should be recalled that some of the old household remedies are best; for example, poultices for pain and whisky for weakness of unknown cause. In the hands of the layman whisky is still safer than many drugs.

One must know not only the primary effects of drugs, but also the secondary, since the long term effect may be much more important. It is probably safer when one wishes to adjust the dosage to decrease the depressants and increase the stimulants in general and it is often surprising the small dose necessary.

Following oral drug administration, the speed of absorption frequently is slower and, if excreted in the urine, this will probably likewise be slower. Although the kidney may have no difficulty eliminating normal products of metabolism, it may with a foreign substance such as a drug, particularly when given in full dosage. If the drug is destroyed in the body by oxidation or other means it also will disappear more slowly due to reduced rate of metabolism in general. Thus there is greater chance for cumulation and secondary effect. In general, it should be remembered that many drugs are more toxic to those in the younger and older age groups.

GENERAL PROBLEMS

Digestive disturbances. — These are common in old people. They may make frequent use of bicarbonate of soda when they really need dilute hydrochloric acid. A small stomach tube usually can be inserted through the nose for gastric analysis. Hypochlorhydria or achlorhydria is not uncommon and at times administration of hydrochloric acid may be quite beneficial. The diet should be scrutinized since certain vegetables,

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milk, nuts and fruits are often the cause of intestinal distress. When it is thought due to spasm, belladonna or synthetic atropine-like agents such as trasentin, pavatrine and syntropan may give relief. Tobacco is a frequent cause of symptoms or hyperacidity and coffee at times will upset digestion. Many of the symptoms are due to arteriosclerotic changes and will not be relieved by any remedies. Cardiac failure, venous stasis, anemia and many other conditions may act to prevent proper gastrointestinal function, but the psychogenic factors should never be overlooked. Bleeding from peptic ulcer may be more prolonged due to the relative rigidity of the vessel wall and accelerated pulse, which is often a sign of continued bleeding, may not occur in the aged. In spite of the fact that the digestive action of free hydrochloric acid and the enzymatic action of pepsin are less in these people, there are relatively more perforations.

Dyspepsia should always be investigated since it may be merely a symptom and actually may be due to something other than intestinal disease, such as heart disease. It has been said that constipation is no more common in the older person than it is in the younger person. It should be remembered that this may be a complaint when actually it is not really present. Rectal constipation, often leading to fecal impaction, is seen most among the hospitalized and those in the old folks homes. Often drugs and enemas will be ineffective and impaction should be suspected and manual removal must be resorted to if necessary. Diverticulosis is a common radiologic diagnosis, but diverticulitis is common in older patients often as a result of constipated stools. One should resort to antibiotics and nonsurgical therapy as long as possible.

Intractable pain.—The combination of morphine and prostigmine may allow one to use a smaller dose of morphine due to the potentiation of effects. One cc. of 1:2000 solution of prostigmine methylsulfate is used. Small doses of morphine may be given by continuous intravenous drip. By this method 5/8 gr. or 0.04 gms. may be added to 1000 cc. of fluid and 100 cc. given per hour. There is remarkable analgesic action with almost complete absence of the usual and objectionable side effects. If the patient is already addicted, however, the dose will have to be raised considerably.

Cobra venom is rarely of value, but there are some circumstances under which it may be worth the slim chance that it will give relief. Unlike opiates, it must be given over a period before any effect is to be expected. If any benefit is achieved, maintenance doses are then used. Routine trial should start with 2½ mouse units intramuscularly and the dose raised the following day from 5 to 10 units. This is continued daily for one week. If analgesia occurs, two or three injections a week may be sufficient to maintain it, but if there is no effect after seven days it is useless to continue. At times nausea, vomiting, diarrhea or intense pain at the site of the injection may result. Intraspinal alcohol injections in the majority of instances give results that may last for several months. This is a rather radical procedure since there may be injury to the spinal cord, however, in cases in which one must do something, it is a calculated risk. Sensory nerves are more susceptible to the effects of alcohol than motor nerves so there is relatively less danger. The injection is done with the patient lying on the side and if there is pain bilaterally, injections are carried out at one week intervals. Several types of nerve section may be done with various ill effects from the surgery itself. Selection of the cases and the actual procedure are in the province of the neurosurgeon.

Diet.—Restrictions imposed because of the fear of inadequate digestion do not seem warranted since old age itself is no reason for dietary alterations. Old people select the quantity and quality of food that satisfies their needs and taste and there does not seem to be adequate evidence to support the warning that they should eat little. The amount of fat in the diet may be regulated by the individual concept of its relation to cholesterol levels and the causation of atherosclerosis. Anorexia may require a great deal of attention. This may simply be due to the loss of teeth or poorly fitting dentures, but there are changes in the taste buds and diminution in the senses of sight and smell that influence the appetite. Prohibition of smoking must be weighed carefully in each case, as it may have dire effects on the emotional state. True vitamin deficiencies are not uncommon among these people.

Sleep.—Inability to rest well at night is a common complaint. It is not that they are disturbed, but that they are simply sleepless. Often some or all of the loss is made up by sleep during the day. Although older persons may complain bitterly about insomnia, it is rarely of serious concern since they require a smaller proportion of the twenty-four hours in sleep than does the younger active person. The best solution is to find something to occupy their time while the younger members of the family sleep. This will obviate the necessity for sedatives which often have undesirable effects, particularly excitement.

Specific Nutritional Needs.—These are essentially the same as those of the younger adult, but modified by aging and chronic metabolic disorders. Many anatomic and physiologic changes are associated with dehydration. Older people, as a rule, do not drink enough water and in prescribing diets and other therapy one must take this into consideration and insist on adequate fluid balance. The proper use of salt and water has become increasingly important in modern medicine. It is known that in twenty-four hours large amounts of fluid are secreted and lost by the

body. It is desirable to maintain a urinary output of from 1,000 to 1,500 cc. daily. To do this, the daily intake must be approximately 2,000 cc. In these people the intake should be spaced so as not to overload the intestines and in men with prostatic obstruction fluids should not be given late in the day, which would increase nocturia. One should resort to beverages, fruit juices, soup and the like, instead of plain water.

It is well known that obesity increases the expected mortality and should be prevented if possible. The prescribed diet should allow enough for vigor and activity. Control of the appetite by the use of anorexogenic drugs is justifiable. Carbohydrate and fats should be reduced but not protein. Rarely obesity is due to metabolic disturbance and thyroid is seldom indicated. Indiscriminate use of thyroid is unwise and at times may even increase the appetite. Planned weight loss should not exceed one pound a week or at most five pounds a month. If more rapid, it is usually more rapidly regained, the patient becomes weak and the skin wrinkles. Protein deficiencies are common in geriatric medicine. Mild lack may be manifested only by habitual fatigue. Plasma proteins will usually be found low. Skimmed milk, dried skimmed milk powder, cheese, protein substitutes, protein hydrolysates and lean meats are the chief sources of this food substance. The value of eggs depends on the concept of cholesterol metabolism. The usual protein requirement of 1 gm. per kilogram a day may be enough, but many patients are in a state of negative nitrogen balance and may require 2 gms. per kilogram a day to produce positive balance. Adequate carbohydrate is prescribed to balance the diet. This is obviously adjusted if lowered glucose tolerance is present. Most minerals are obtained in adequate amounts, but calcium and iron are frequently deficient. Elderly people often dislike milk and milk products and have difficulty in their absorption and utilization. Daily requirements for iron are about 12 mg. and habitual intakes below this are common so that moderate anemia in the aged is frequent. Instead of forcing certain foods, it is much simpler to add ferrous sulfate in tablet or liquid form. Minor degrees of vitamin deficiency are commonplace and liberal amounts of multivitamin preparations may improve the general vitality and vigor a great deal. Because of the changes in absorption and utilization, the average requirement is greater. Excesses of condiments and spices may be irritating to the intestinal tract. Coffee and tea are not contraindicated in general, but if they produce insomnia they should be eliminated. It should be remembered that excesses in nutrition are apt to be as harmful as deficiencies.

SPECIFIC DRUGS

Belladonna is a most useful drug, but cumulative effects may result and it must be used cautiously since excitement may result. Thus it is wise when use over a long period of time is anticipated that one of the synthetic atropine-like drugs be substituted. Antispasmodics in constipation when combined with cascara may be effective even though strong cathartics and enemas are not. This is also true in gastric irritation and spastic colitis. Belladonna should not be used in the presence of glaucoma.

Strychnine has been used for many years. Small doses may be beneficial but too much or too prolonged use may favor senile degeneration or secondary effects. It may be used as a general muscular excitant and for many years it has been favored as a "tonic." Combined with bitters it may improve the appetite and the digestion, aid atonic conditions of the gastrointestinal tract and help general weakness. It stimulates the central nervous system by increasing the irritability of the cord. For incontinence in old age, 1/120 gr. three times a day may be useful.

Strychnine should not be used in post-hemiplegic conditions or when a lesion of the spinal cord is suspected. It has been used for shock, but superior drugs, especially levophed, are now available. In the last analysis the uses of this drug are empirical and some say irrational. If nervousness, irritability or twitchings of the muscles of the face occur, it should be stopped immediately.

Antipyretics and Analgesics.—These must be employed with care as they may cause cyanosis and respiratory depression. In febrile conditions, phenacetin or acetylsalicylic acid will usually suffice. One may use small doses and repeat at two hour intervals instead of large doses at the usual four hour period. Aminopyrine and other drugs of this type that may cause idiosyncrasy are not to be used. Acetylsalicylic acid combined with codeine is one of the best analgesics, particularly for pain of nonvisceral origin.

Morphine is a valuable drug in the aged as it causes rest but, when required, it should be given in small doses, 1/8 to 1/6 gr. (0.008-0.010 mg.). It may be combined with scopolamine 0.0003 gm. which may diminish respiratory depression. If nausea or vomiting result, it is well to use atropine occasionally in combination, in doses of 1/150 to 1/200 gr. Morphine is not well tolerated by patients who have pernicious anemia or myxedema. For patients with cardiac disease, particularly pulmonary edema and myocardial infarction, it is unsurpassed.

Papaverine is a smooth muscle relaxant and may be used in myocardial infarction in 1½ gr. (0.09 gm.) doses four times a day and is more easily and safely given orally.

In this group of people, sedatives may cause them to be wide awake and maniacal due to secondary effects after the primary action has taken place. This is likewise true of the opiates.

These effects may be more pronounced than the primary action.

Many conditions of pain will respond to the use of allonal. Pain, whether gastrointestinal in origin or due to injuries such as fractures or contusions, will often be relieved by codeine and there is little danger of habit formation. Many patients can take codeine every night for years without needing increased dose. Often it may be used to relieve pain that prevents sleep. At times the combination of codeine with phenacetin may be effective when other measures fail. Codeine does not have the unpleasant effect of the stronger opiates and does not cause the dreams that result with morphine. Dilaudid has an equal or better analgesic effect than morphine and does not cause untoward symptoms as readily. Hypodermically it is used in doses of 1/64 to 1/32 gr. Codeine is useful in pneumonia for its effect on pain and also on the cough reflex. Morphine is likewise effective but may stimulate the vomiting center and suppress respiration. For constant pain, such as occurs in neoplastic disease, morphine is eventually needed. Demerol also may be effective but may have cumulative toxic effects and is not a potent soporific. Although addiction to demerol may be slightly less, this is not adequate reason for its use.

For painful conditions that are correctable, opiates may be used in larger doses since there is less danger of addiction. If difficulty in stopping morphine is experienced, less potent drugs such as codeine or barbiturates may be tried. It should be remembered that all sedatives, particularly opiates, must be used with care in older people, since the patient may become so drowsy that he will not even take nourishment. This is especially true in postoperative conditions.

Barbiturates.—Phenobarbital in ¼ to ½ gr. (0.015-0.03 gm.) doses once or twice a day will relieve many indefinite nervous symptoms. On the other hand, many older people are sensitive to the drug. The difficulty is that many of them take a tablet every time they feel nervous and it then becomes dangerous from the toxicity standpoint. It is probably best to give a harmless medication to begin with and allow free use as one may do with thiamin. If the prescription is given in the proper way and its purposes emphasized, the desired effect will often result. Older people may like medicine and feel better if given something. An elixir of thiamin with simple bitters may answer their requirements. Placebos are justifiable at times. It should again be emphasized that one should give older people as few depressants as possible since their long continued use may cause mental changes ranging from personality change to actual psychosis.

Digitalis.—This is a most valuable drug in cardiac insufficiency at any age. Some advocate its use in older people in less than full dosage, especially when the patient is ill with infectious disease, or postoperatively. In these cases it is used as "support," but there is no good evidence to substantiate its use in this manner. It should be remembered that insomnia may be due to cardiac insufficiency and digitalis may be helpful. The use of whole leaf preparations is probably preferable since the toxic gastrointestinal symptoms appear promptly and overdosage can be prevented. The dose required, speed of digitalization, toxic signs and indications are the same regardless of age. As an adjunct to digitalis one must remember the use of low sodium diets and mercurial diuretics.

Chemotherapy and antibiotics. — Sulfonamides are used less and less today. If they are employed, it is best to use one of the combined sulfonamide preparations, or one of the less toxic products. The danger of side reactions and the factor of poor renal function must be kept in mind. They have been helpful, however, in treating patients with emphysema and chronic bronchitis, which does not respond to other therapy, and the use of doses in the range of 1 gm. a day may be quite beneficial.

Penicillin, aureomycin, terramycin and chloromycetin are certainly of proved value, both therapeutically and prophylactically. The dosage schedule is comparable to that which is recommended for other age groups. Special care should be exercised when streptomycin is used, particularly if there is any degree of renal damage since toxic effects, particularly those on the eighth nerve, result from high blood levels.

Steroid Hormones.—Cortisone and ACTH may at times be indicated. This is particularly true in diseases of the joints and bursae, thrombophlebitis, asthma, chronic skin disorders, preparation of poor surgical risks and inflammatory diseases of the eye. They are more or less contraindicated in the presence of severe hypertension, congestive heart failure, renal insufficiency, peptic ulcer, osteoporosis and emotional instability. Often they may be used to decrease pain and thus prevent the need for bed rest. It is safe to use them in those instances in which one expects that a short period of therapy may prove sufficient. The use in osteo-arthritis which is so common in older people is debatable. However, even if there is no effect on the underlying disease the effect upon the patient's emotional state may be remarkable. The patient must be watched carefully and the dose reduced as soon as possible. Observation of the cardiovascular system, glucose tolerance and blood electrolytes is mandatory.

Miscellaneous.—Banthine may be used quite effectively in the treatment of peptic ulcer. It should be remembered, however, that older men with prostatic hypertrophy may have urinary retention when this drug is used.

Dicumarol is of value not only in myocardial infarction but in patients who have to have prolonged bed rest. It is also employed in cerebral

thrombosis if hypertension is not present. The use of intravenous procaine solution and stellate ganglion block should also be considered in cerebral thrombosis.

If older people are accustomed to alcohol, it is a mistake to withdraw it abruptly unless the condition is acute. Attempts should be made to substitute a stimulant of nonalcoholic nature whenever possible. It is not necessary to disrupt the habits of the individual who drinks moderateately. For those who do not use alcohol, it is a mistake to prescribe it during an illness for many of them cannot stop when the illness is over. Alcohol may have a depressant or exciting effect and although it affords food energy the normal diet or parenteral glucose is better and safer. If the diet is deficient at the expense of alcohol vitamin B may be helpful. Most complications of alcoholic intake may be avoided if adequate diet is provided. The effect of alcohol on the appetite at times is good and it may be necessary to allow a small amount from an emotional standpoint. There is no rationale for the use of alcohol in peripheral vascular disease and if it is used the treatment may be worse than the disease itself in the long run. At times in aged people who have incurable diseases the beneficial effects of alcohol should be remembered.

Benzadrine sulfate may be of value in older people in doses of from 10 to 20 mg. a day. An increased sense of well being and greater energy may result and there are few toxic reactions that occur.

Due to the high incidence of heart disease, quinidine must be mentioned. Premature contractions are often the first sign of irritability of the myocardium and often cause unpleasant symptoms. Quinidine in doses of from 2 to 5 grs. three or four times a day may be satisfactory to correct the condition. Chronic auricular fibrillation often may be converted to normal rhythm and this frequently is desirable since the efficiency of the fibrillating heart is probably reduced even when the rate is well controlled by digitalis. It is recommended that the rate be reduced by digitalis and dicumarol be given before quinidine is administered. The dose of quinidine should be increased every twenty-four hours, but at no time should a total dose of 6 gms. be exceeded in any twenty-four hour period. If toxic symptoms appear, the dose is reduced and maintained at that level a few days before being increased again. The danger of embolic phenomena is no greater than with other therapy or with no therapy at all. Since ventricular fibrillation is often the cause of death in myocardial infarction, it may be well to give quinidine in doses of 3 grs. two or three times daily in the first week or two of the illness, since it has been shown that it will reduce the possibility of this complication as well as the incidence of paroxysmal tachycardias in general. Procaine amide may be useful in some forms of cardiac arrhythmia but parenteral administration is attended by definite side reactions.

Benadryl may be effective in paralysis agitans. It is begun in small doses and gradually increased, if well tolerated, so that at times one may give doses in the range of from 400 to 600 mg. daily. Artane may also be used in increasing doses for the control of tremor. Benadryl alone is an excellent sedative that may be used at bed time.

Bromides are being used less frequently today because of the recognition of the inherent dangers. Phenobarbital and dilantin are much more satisfactory for the convulsive disorders. It has been found in older people that a much greater percentage of bromide enters the cerebrospinal fluid and toxic neurologic effects, particularly phychoses, may result more easily.

In conclusion a warning is again issued to use drugs cautiously in geriatric practice. Reassurance and harmless medication are often better than strong drugs. Do not overtreat these individuals since it may lead to disastrous results.

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THE RELIEF OF VARIOUS TYPES OF PAIN WITH A DOUBLE CALCIUM SALT DERIVATIVE

A PRELIMINARY REPORT

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The relief of pain is a primary problem encountered by most physicians. Many patients seek medical attention primarily to get relief from a pain or ache whose origin they cannot explain to themselves, or for which there is no proprietary or self-medication. Patients suffering from muscular pain in the back, neck or shoulders are often seen after the pain has been present for several weeks and after spasticity, tenderness and swelling have complicated the clinical picture. The treatment of these pains is a complex problem and often is not too successful.

This is a preliminary report on the use of a double calcium salt for relief of myalgias, back and other pains. This double salt, calcium gluconogalactogluconate, was used because of its high solubility and stability which gives greater absorption and more safety than other available calcium salts (as Dr. Cantarow quoted on high solubility giving better absorption[1]). This salt is the only calcium salt which stays in solution without a foreign buffer up to 20 and 30 per cent.

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In handling such cases it must be remembered that diagnosis is important. The etiology of the pain must be determined, if possible, and treated in order to help relieve the patient.

REVIEW OF THE PROBLEM

Many methods of treating myalgias have been employed. Procaine injections have been used in various types of pain of traumatic and inflammatory origin.[2] The trade name of the double calcium salt is Neo-Calglucon and each 1.0 cc. of the 20 per cent solution contains 0.275 grams of calcium gluconogalactogluconate equivalent in calcium ion content to 1.0 cc. of calcium gluconate, each 1.0 cc. of the 30 per cent solution containing 0.412 grams of calcium gluconate. These double calcium salts were produced by the Sandoz Research Laboratories. The 30 per cent double calcium salt is an investigational preparation and not available on the market. This type of treatment does not treat the source of the difficulty, but does relieve the severe pain. Mild analgesics also have been used with some success but, there again, only palliative measures are being employed.

A recent article[3] appeared reporting the employing of a hormonal substance for the treatment of arthritis, bursitis and other rheumatoid conditions. No relief was obtained in patients having advanced rheumatoid arthritis. Good results were obtained in certain cases of soft tissue rheumatism. It must also be kept in mind that hormonal therapy is not without danger since it may alter the normal hormonal balance and produce a more serious condition than the one being treated. It is interesting that the following article in the same journal discussed a physiologic approach to the treatment of sciatica. Hodas[4] and his group

TABLE 1. *Results with 20 Per Cent Solution.*

Pt. No.	Age	Sex	Diagnosis	Dose ECA 20%	Location of pain	RESULTS Complete Relief	Partial Relief	No Relief	When Relief Is Obtained
1.	40	Male	Pleurisy	2 (10 cc.)	Chest		X		10-15 min.
2.	45	Male	Back Ache	10 cc.	Lumbar Area	X			10-15 min.
3.	33	Male	Myalgia	10 cc.	Left Elbow	X			At Once
4.	62	Male	Migraine Headache	10 cc.	Head and Neck	X			10-15 min.
5.*	35	Male	Bursitis	10 cc.	Right Deltoid	X			At Once
6.	27	Female	Bursitis	10 cc.	Right Shoulder	X			10-15 min.
7.	24	Female	Back Myalgia	10 cc.	Lumbar Area		X		10-15 min.
8.	50	Male	Lumbago	2 (10 cc.)	Lumbar		X		10-15 min.
9.	25	Male	Acute Bursitis	3 (10 cc.)	Right Shoulder			X	24 hours
10.	72	Male	Trauma		Left Lumbar Area			X	
11.	40	Male	Contused Left Knee	2 (10 cc.)	Left Knee		X		48 hours
12.	55	Female	Osteo-Arthritis of spine	3 (10 cc.)	Upper Cervical Lumbar	X			
13.*	61	Male	Arthritis in Right Knee	3 (10 cc.)	Right Knee		X		120 hours
14.	45	Male	Spasm of left Supraspinatus Muscle	5 (10 cc.)	Left Deltoid Area		X		Week
15.	35	Male	Torticollis	10 cc.	Left Half of Neck		X		10-15 min.
16.		Male	Bursitis	2 (10 cc.)	Left Deltoid Bursa	X			10-15 min.
17.	16	Male	Torticollis	2 (10 cc.)	Neck		X		10-15 min.
18.		Male	Myalgia	2 (10 cc.)	Back Lumbar Area		X		At Once
19.	30	Male	Myalgia	10 cc.	Right Gluteal		X		At Once
20.	45	Female	Arthritis	10 cc.	Right Ankle		X		At Once
21.	45	Male	Bursitis	2 (10 cc.)	Right Shoulder	X			At Once
22.	42	Male	Bursitis	2 (10 cc.)	Left Shoulder	X			10-15 min.
23.	30	Female	Myalgia	2 (10 cc.)	Chest	X			At Once
24.	30	Male	Myalgia	10 cc. on 10-27-51 10 cc. later	Lumbar—Hurts to Stoop		X		10-15 min.
25.	65	Male	Sciatica-like pain	10 cc.	Upper Left Leg	X			At Once
TOTAL						11	12	2	

TABLE 2. *Results with 30 Per Cent Solution.*

Pt. No.	Age	Sex	Diagnosis	Dose NCA 30%	Location of Pain	RESULTS Complete Relief	Partial Relief	No Relief	When Relief Is Obtained
1.	44	Male	Myalgia	1 (10 cc.)	Left Leg			X	
2.	45	Male	Myalgia		Neck				
3.	38	Male	Myalgia	1 (10 cc.)	Neck & Arm Ligaments		X		At Once
4.	24	Male	Myalgia	1 (10 cc.)	Supraspinatus		X		At Once
5.	38	Male	Myalgia		Neck With Radial Pain		X		At Once
6.	51	Male	Chronic Arthritis	10 cc. 5/24 10 cc. 5/25	Back and Arms		X		24 hours
7.	50	Male	Bursitis—right shoulder	10 cc.	Right Shoulder		X		One hour
8.	63	Male	Right Wrist	3 (10 cc.)	Right Wrist		X		3 days
9.	58	Female	Back	2 (10 cc.)	Back		X		2 days
10.	50	Female	Right Shoulder						
TOTAL						0	7	1	

* Had something before with no relief

employed a glucuronic acid derivative with good results. It is also possible that the calcium gluconate portion of this double calcium salt breaks off as glucuronic acid in the liver when administered intravenously. Glucuronic acid plays a major part in detoxification by conjugating with the toxic material.

The importance of these two articles is that they indicate the value of a physiologic approach to the treatment of myalgic pain. With this in mind and also the low toxicity along with the other compatible physical qualities previously mentioned, this double calcium salt was used. Another recent report[5] on the use of a calcium salt in the third stage of labor impressed me with the fact that calcium can produce a strong contraction in uterine muscles. These authors employed calcium gluconogalactogluconate. A comparison of the formulas of glucuronic acid and of this double calcium salt shows a strong similarity.

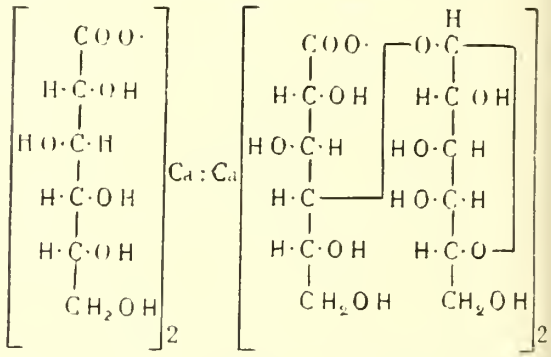
I employed 20 per cent and 30 per cent solutions of the Neo-Calglucon for the treatment of myalgias. This is a preliminary report whose results indicate the necessity of further investigation on the use of a double calcium salt in the treatment of various myalgias.

METHOD OF STUDY

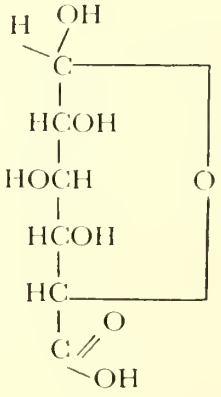
Patients complaining of various muscular pains were included in this series. They were given complete physical examinations with the necessary laboratory tests and x-rays made when indicated. Some were treated with novocain, but remissions occurred. After the examinations were concluded, intravenous injections of 10 cc. of 20 per cent or 30 per cent Neo-Calglucon were given. The material was administered slowly until the patient reported the first feeling of heat sensation. When this sensation was not felt, poor therapeutic response could be predicted. Results are recorded in the tables.

DISCUSSION

The use of calcium gluconogalactogluconate in treating various myalgias is based on a physio-



Calcium Gluconogalactogluconate



Glucuronic Acid

Fig. 1

logic approach. Calcium deficiencies will lead to muscular spasms, which will be relieved by calcium administration. Calcium administration will also increase muscular contraction. Results indicate relief of pain, probably as a result of muscular relaxation. Increase in movement, reduction in swelling and tenderness also occurred following intravenous injection of Neo-Calglucon. Further study is necessary to determine whether the 20 per cent or 30 per cent solution is preferable.

The matter of controls or placebo was carefully considered. In some cases distilled water was injected with no apparent therapeutic benefit. The majority of the patients were not of neurotic tendency and were genuinely interested in obtaining actual relief. In cases of sciatica, neuritis, bursitis and lumbago, relief can be discernible by the amount of normal movement that is obtainable after treatment.

It can be concluded therefore from this preliminary study that Neo-Calglucon gives indication of being effective for the treatment of various myalgias. It is a safe, physiologic approach to this therapeutic problem.

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MASSIVE GASTROINTESTINAL HEMORRHAGE

REPORT OF FIFTY-TWO CASES AT ST. LOUIS COUNTY HOSPITAL 1946 TO 1951

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MASSIVE HEMORRHAGE from the upper gastrointestinal tract constitutes a real medical emergency and there is some reason to believe the prompt, correct and adequate treatment is of extreme importance.

Several papers recently have emphasized the need for large amounts of blood and for prompt surgical treatment if the patient fails to respond. The procedure at the St. Louis County Hospital during the period studied has been individualized. Each patient has been treated as was thought best by the attending physician based on the history, physical findings and laboratory tests done at the time of admission. Only patients with severe upper gastrointestinal hemorrhage have been included.

This study is a summary of fifty-four admissions of patients with massive upper gastrointestinal hemorrhage to the medical-surgical wards at the St. Louis County Hospital from 1946 through 1951. During this period fifty-two individual patients were admitted for massive gastrointestinal hemorrhage. Two patients were admitted twice.

The patients in this group were selected because they showed evidence of massive hemorrhage indicated by shock, severe anemia or definite evidence of gross bleeding. The hemoglobin ranged from 3 to 18 gms. per 100 cc. The latter reflected compensatory hemoconcentration. In approximately 50 per cent of cases the hemoglobin was from 8 to 12 gms. per 100 cc. Three had hemoglobin concentrations greater than 15 gms. per 100 cc. but were shown to have massive gastrointestinal hemorrhage at autopsy.

CAUSES

In this series of fifty-two, a duodenal ulcer was the cause in seventeen cases or 32.7 per cent (table 1). No definite diagnosis was made in eleven cases. Cirrhosis of the liver with bleeding esophageal varices occurred in six patients (12 per cent) and there were five cases of gastritis (9.6 per cent). No cases of gastric carcinoma were found. Two cases of prolapse of the gastric mucosa and diverticula of the small intestine were found.

Table 1. *Causes Massive Gastrointestinal Bleeding in Fifty-two Cases*

	Number	Per Cent
Duodenal Ulcer	17	32.7
Gastric Ulcer	6	11.5
Cirrhosis	6	11.5
Gastritis	5	9.6
Unknown	11	21.0
Prolapse of the Gastric Mucosa	2	3.8
Diverticula of the Small Intestine	2	3.8
Hiatal Hernia	1	1.9
Probable Marginal Ulcer	1	1.9
Purpura	1	1.9

Thus, almost 50 per cent of the cases of massive gastrointestinal bleeding were due to peptic ulcer and there were approximately three times more duodenal ulcers than gastric ulcers. Next leading known cause was portal hypertension, then gastritis. Unknown causes made up almost one fourth of the cases.

AGE AND SEX INCIDENCE

In the series there were thirty-five males and seventeen females, males 67.3 per cent, females 32.7 per cent. The age range was 29 to 87 years (table 2).

Thus, the greatest incidence was between 40 and 80 with more than 50 per cent occurring in the 60 to 80 age group. The highest incidence was in the 7th decade.

From the Medical Service of the St. Louis County Hospital, Clayton.

MORTALITY

In the fifty-four admissions there were twenty-one deaths or a mortality rate of 38.9 per cent. Of these all but two died after nonsurgical treatment. Thus, medical mortality was 36.5 per cent (table 3).

MEDICAL MORTALITY

Medical therapy included blood transfusions up to 12 units (6,000 cc.), milk and cream, soft bland

Table 2. *Age Group in Massive Gastrointestinal Hemorrhage 52 Cases*

Age Range	Number	Age Range	Number
20-30	1	61-70	16
31-40	4	71-80	12
41-50	8	81-90	3
51-60	8		

diet, antispasmotics, sedation (usually parenteral barbiturate) and careful observation. Peptic ulcer was the leading cause of death in eight cases (42 per cent), (table 3), portal hypertension four (21 per cent) gastritis two (10.5 per cent). Unknown causes in four (21 per cent) (no definite cause found or no autopsy obtained).

Table 3. *Summary Medical Treatment Mortality —Nineteen Cases 36.5 Per Cent*

	Number	Per Cent	
1. Ulcer			
Duodenal	4	21	42
Gastric	4	21	
2. Cirrhosis	4	21	
3. Gastritis	2	10.5	
4. Unknown	4	21	
5. Blood Dyscrasia	1	5	

About two and one half times more males than females died. Sixteen out of nineteen (84 per cent) died after the age of 50. Therefore, eight individuals in the 7th decade (42 per cent) died.

SURGICAL MORTALITY

Of the fifty-four admissions for gastrointestinal hemorrhage six surgical operations were performed. One patient was admitted for hemorrhage which ceased on medical therapy. The patient was admitted a few days later and a successful gastric resection was performed as an interval operation.

Table 4. *Mortality by Sex and Age—Nineteen Cases Treated Medically*

20-30	Male 1	Female .
31-40	Male .	Female .
41-50	Male 1	Female 1
51-60	Male 3	Female .
61-70	Male 7	Female 1
71-80	Male 2	Female 2
81-90	Male .	Female 1

Of the six cases treated by surgical intervention while actively bleeding, four were discharged from the hospital without complication.

Of the two patients who died, one was a 69 year old male. The patient gave a history of a bout of alcoholism before admission with hematemesis. He was operated on with a diagnosis of a bleeding ulcer with obstruction but was found to have a strangulated femoral hernia. Resection of a loop of gangrenous jejunum was performed, but the patient succumbed a few hours postoperatively. Autopsy showed an acute necrotizing esophagitis, gastritis and a duodenitis (cause undetermined), gangrenous loop of jejunum, pulmonary congestion, pneumonia and cirrhosis of the liver.

Table 5. *Summary of Surgical Treatment—Six Cases*

Sex	Age	Diagnosis	Operation
Female	70	Gastric Ulcer	Subtotal gastrectomy with gastrojejunostomy
Male	71	Duodenal Ulcer	Same
Female	78	Duodenal Ulcer	Same
Male	69	Acute corrosive esophagitis, gastritis and duodenitis	Resection jejunum with enterostomy
Female	84	Duodenal Ulcer	Subtotal gastrectomy
Male	47	Duodenal Ulcer	Subtotal gastrectomy

The other death was in an 84 year old female with arteriosclerotic heart disease. The patient had a history of hematemesis and melena prior to entry. The patient had a subtotal gastrectomy for a duodenal ulcer. Tarry stools continued. The patient developed phlebitis of a lower extremity and dependent pneumonia. Autopsy also showed cirrhosis of the liver. Each of the four surviving operative patients had subtotal gastrectomy (table 5).

Table 6. *Results*

Post-Operative	Complications	Living or Died
Disruption of abdominal wound	Adeno carcinoma of breast with axillary metastasis	Living
Disruption of abdominal wound	Arteriosclerosis	Living
———	Moderately advanced Tuberculous lung	Living
———	———	Died
———	Arteriosclerotic heart disease—coronary insufficency	Died
———	———	Living

The mortality with surgical therapy in this small series was 33.3%.

PATHOLOGIC EXAMINATION

Of the patients in this series (fifty-two) nineteen autopsies and five surgical specimens gave proof as to the diagnosis (46.1 per cent). The diagnoses in the remainder of cases was established by x-ray, esophagoscopy, gastroscopy and so forth. There were four cases of perforated ulcer found at autopsy together with evidence of massive gastrointestinal hemorrhage. Two cases were duodenal ulcer, the others stomach ulcer.

PLAN OF THERAPY

At the St. Louis County Hospital during the last five years each case of gastrointestinal hemorrhage has been treated individually. In general, the patients are admitted to the medical service and diagnostic and therapeutic means used to combat shock and anemia and to locate the site of bleeding. The surgical service usually sees the patient from the beginning and there is joint medical surgical collaboration. The patient is transfused and the surgeon decides as to those cases to be operated upon.

Table 7. *Overall Mortality (Medical and Surgical) Sixteen Cases*

	No. of Cases	Per Cent Total	No. of Deaths	Per Cent Mortality	
1. Duodenal Ulcer	17	32.7	5	29.4	39
2. Gastric Ulcer	6	11.5	4	66.7	
3. Cirrhosis	6	11.5	4	66.7	
4. Gastritis	5	9.6	3	60	
Total 52 Cases					

DISCUSSION

A review of the literature during the last five years was undertaken to compare results with those in other institutions.

In general, most series, as does this one reported, list duodenal ulcer as the primary cause. Peptic ulcer, esophageal varices and gastritis comprise the major three causes of upper gastrointestinal hemorrhage. Males predominant as in this series.

It has been pointed out by Welch[1] that the mortality rate in various reports have varied because of the patients included in the series. He has included in his series of 363 cases only those patients with a red blood count of 2.5 million or less and a photohemoglobin of less than 7 gm. A mortality of 14 per cent due to peptic ulcer from 1937 to 1941, 11 per cent, 1942 to 1947, and 10 per cent in 1948.

Hoerr[2] et al in a summary of 163 patient admissions with hemorrhaging peptic ulcer from 1940 to 1947 had a percentage mortality of 4.5 under medical management and 33.3 per cent with surgical management with overall mortality of 6.1 per cent.

A comparison of these figures with our overall mortality of 39 per cent for hemorrhaging peptic ulcer would seem to indicate that our mortality is excessively high. However, it should be pointed out that the type of patient included in the series is important, so that neglected cases, that is, cases brought to the hospital late and who have been in shock for hours or days will do poorly under any circumstances. The patient's nutritional state is also a factor as poorly nourished patients do not do well, of course.

Both these investigators have a definite plan as to the treatment of massive gastrointestinal hemorrhage. In view of these results a brief résumé of their plan does not seem amiss.

Welch[1] at Massachusetts General Hospital states that if the patient has a positive or presumptive diagnosis of ulcer the patient is admitted to surgery. While under observation the patient is given gelusil, soft bland diet, sedation and blood transfusions. If the patient is still bleeding after five units of blood (2,500 cc.) the patient is operated on immediately. Almost all these patients will be over 50 years of age he reports. The patients who stabilize with from two to three transfusions are kept on surgery for three days because about one fourth will bleed again during their three days on surgery. If they do have a recurrence they have an immediate operation. The remainder are transferred to medicine and are built up and can have interval operation.

Hoerr[2] et al at the Peter Bent Brigham Hospital points out that the rate of hemorrhage and its effect on the circulation is the most important factor in gastrointestinal hemorrhage. He points out four arbitrary groups of gastrointestinal hemorrhage. He advocates surgery in his exsanguinating hemorrhage group. This group includes those with syncope and shock without response to 500 cc. blood every eight hours. He states there should be a bedside team of internist and surgeon. If there is no evidence of syncope or shock there is no reason to have an emergency operation. If the patient develops shock or syncope that does not respond to 1,500 cc. every twenty-four hours then increase the rate of transfusion to stabilize the circulation and operate immediately.

CONCLUSIONS

A comparison with results of massive gastrointestinal hemorrhage in other institutions reveals that the per cent mortality of combined medical-surgical treatment of bleeding peptic ulcer seems to be significantly lower in other institutions. But, in receiving this series it seems that actually this may be misleading. Why were more patients not operated upon? Certainly some could have been and perhaps saved. Factors which prevented surgical intervention are numerous. We have an elderly group of individuals at the County Hospital but it is in these individuals with arteriosclerotic vessels who might benefit the most. Transfusions to bring a better blood count sometimes resulted in the bleeding being greater than the replenishment resulting in the death of the patient. Poor coordination of efforts by joint medical and surgical staff could be a factor. Some of the patients had other disabilities which dissuaded surgery such as cerebral vascular accident, lung infection, endocrine dysfunction, heart disease and other degenerative disease.

It is suggested that a definite plan of treatment as to continuing conservative therapy or undertaking surgery might be adopted. Two such plans were reviewed.

SUMMARY

A summary of results with massive gastrointestinal hemorrhage at St. Louis County Hospital from 1946 through 1951 is presented. Results and plans of treatment at two other institutions are cited.

Every hospital should have close combination between its medical and surgical staffs in the treatment of gastrointestinal hemorrhage. A definite plan for treatment of massive gastrointestinal hemorrhage seems valuable.

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ADJUNCTIVE THERAPY IN MIGRAINE

A PRELIMINARY REPORT

HENRY D. VON WITZLEBEN, M.D.
CHICAGO

Symptomatic treatment of the migraine syndrome is now generally accepted[1, 2, 3, 4, 5, 6] as being controlled in the acute phase with vasoconstrictors such as Gynergen, DHE-45 and Dafergot. It is also generally accepted[7, 8, 9] that psychotherapy plays an important role in the actual treatment of these patients over a period of time.

However, before the patient is accepted for psychotherapy, careful physical examination, laboratory tests and neurologic examinations must be provided and studied carefully in order to rule out any possible organic lesions. When this has been done, the psychiatrist may accept the patient to aid him with the functional disorders existing.

It is suggested that psychotherapy be employed on all patients with functional disorders. The relative success of this procedure is wide and variable. For a number of years I have felt the necessity of employing adjunctive drug treatment in certain of these patients. A preparation known as Bellergal* which inhibits to a degree the sympathetic and parasympathetic impulses of the autonomic in addition to quieting the central nervous system has been useful for patients.

The following is a summary of results obtained in my series of twenty-eight migraine (hemicrania) patients who received both psychotherapy and drug therapy. Of these patients there were six males and twenty-two females ranging in age from 18 to 56 years. The duration of the migraine attacks ranged from four to twenty-one years. Only seven patients provided familial history of migraine. It was noteworthy to learn that eleven women had migraine attacks limited to the time of the menstrual period.

TABLE I. *Results*

Patients free of attacks for more than two years	15
Patients free of attacks for more than one year	7
Patients free of attacks for more than six months	4
Patients not improved	1
Patients relapse	1
Total	28

The usual dosage schedule for Bellergal was as follows: three times a day for four, five or six weeks, then twice a day for three or four weeks, then once a day for one or two weeks; discontinue for one month then start again with twice a day for three weeks, then once a day for four weeks.

This schedule is, of course, flexible and has to be adjusted to the needs of the individual.

No side effects with Bellergal were apparent in any of the twenty-eight patients studied.

Migraine patients do respond to psychotherapy providing there are no underlying organic lesions; therefore, migraine is also a psychosomatic problem. If time and expense on the part of the patient and physician were not to be considered, there would be no need for further adjunctive drug therapy. Drugs such as Bellergal will not replace or even act as substitutes for psychotherapy but if it is used judiciously in conjunction with suggestions and advice from clinicians, it will aid patients when regular contact with the psychiatrist is not possible. It has been observed to increase the length of time between attacks and it may even decrease the intensity of pain when hemicrania does occur.

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* Bellergal contains: ergotamine tartrate, 0.3 mg., sympathetic inhibitor; Bellafoline, 0.1 mg., parasympathetic inhibitor; phenobarbital, 20.0 mg., central nervous system sedative.

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AUTHORS	No. of Patients	Chronic, Resistant to Other Therapy	TYPES OF ULCERS				RELIEF OF SYMPTOMS (Chiefly Pain)				Surgery or Complications[1]	Side Effects Requiring Discontinuance of Drug[2]	EVIDENCE OF HEALING			
			Duodenal	Jejunal	Stomal	Gastric	Good	Fair	Poor	No Report			Complete	Moderate	None	No Report
Grimson, Lyons, Reeves	100	100	93	7			80	11	4		5		47		19	29
Friedman	15	15	14			1	5		4	6[3]			2			13
Bechgaard, Nielsen, Bang, Gruelund, Tobiassen	26	26	21			5	16	4	6				8	6	12	
McHardy, Browne, Edwards, Marek, Ward	162		162				136	12	11		3	1	14	9	7	129
Segal, Friedman, Watson	34	34	34[4]				14	13			7	2	5		8	14
Brown, Collins	117	99	117				97	7	8		5	8	55	9	8	40
Asher	77		65		7	5	52	9	16			16		9	21	47
Rodriguez de la Vega, Reyes Diaz	5	4	5				4		1					3	2	
Winkelstein	116	116	102	8		6	102		14				53		18	45
Hall, Hornisher, Weeks	18	18	18				11		1	6[5]			18			
Maier, Meili	38	38	24			14[6]	27	7	4[7]				10	2	5	21
Meyer, Jarman	25	18	25				21		4							25
Poth, Fromm	37	37	37				33	3	1				33	3	1	
Plummer, Burke, Williams	41	41	41				36		5				38		3	
McOonough, O'Neil	104	100	104				63	10	31			11	4		11	89
Broders	60	60	58		1	1	35	19	6				10	1	49[8]	
Legerlon, Texter, Ruffin	11		11				11									11
Holoubek, Holoubek, Langford	76	69	76				35	27	10		4	10	26		10	36
Ogborn	42		39	2		1	42[9]									42
Sharken	48	48	48				33	10	3		2		33	10	3	
Johnston	145	145	145				143		2			2	143		2	
Rossett, Knox, Stephenson	146		141			5	146					4[10]	53			93
TOTALS	*1443*	*968*	*1380*	*17*	*8*	*38*	*1142*	*132*	*131*	*12*	*26*	*54*	*552*	*52*	*179*	*634*
PERCENTAGES		67.8	95.6	1.2	0.6	2.6	81.3	9.4	9.3			3.7	70.5	6.6	22.9	

1. Not included in tabulations.
2. Included in "Relief of Symptoms" as "Poor" and in "Evidence of Healing" as "None."
3. Four had no symptoms when Banthine therapy was begun.
4. Of which seven were penetrative lesions and five partially obstructive.
5. No symptoms were present in four.
6. Two with symptoms only; no demonstrable ulcer.
7. Three were psychopathic patients and one had a ventricular ulcer of the lesser curvature.
8. Roentgen findings after treatment period of two weeks; forty-seven had duodenal deformity.
9. All returned to work within a week.
10. In these four, after relief of symptoms, Banthine was discontinued because of urinary retention.

During the past two years, more than 200 references to Banthine therapy in peptic ulcer and other parasympathotonic conditions have appeared in medical literature. Of these reports, 22 have presented specific facts and figures on the results of treatment in a total of 1,443 peptic ulcer patients, 67.8 per cent of whom were reported as chronic or resistant to other therapy. These results are tabulated above and show:

"Good" relief of symptoms was obtained in 81.3 per cent of the 1,405 patients on whom reports were available.

"Complete" evidence of healing was obtained in 70.5 per cent of the 883 patients on whom reports were available.

In all but 9.7 per cent, relief of pain was "good" or "fair." In all but 22.9 per cent, evidence of healing was "complete" or "moderate."

During treatment, 26 patients required surgery or developed complications other than ulcer which required discontinuance of the drug before results could be evaluated.

Of the remaining 1,417 patients, only 3.7 per cent experienced side effects sufficiently annoying to require discontinuance of the drug.

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Postgraduate Review

THE DIFFERENTIAL DIAGNOSIS OF INTESTINAL AND GYNECOLOGIC LESIONS

EUGENE H. COUNTISS, M.D.
NEW ORLEANS

With some hesitation I begin these remarks with the statement that a specialist is a physician who knows more and more about less and less. This is a well worn cliche, I admit, but its antiquity does not in any way lessen the usefulness of its implications. All who specialize would do well to bear it in mind. The recollection might save us who are gynecologists from some of the errors which we make, not because we do not know, but because we do not stop to remember that the patient is a human being who does not lend herself to division into diagnostic compartments.

For my own part, I am grateful for the revival, or more correctly, the renewed recognition, of the importance of general practice. The general practitioner maintains a perspective which all need, and I am glad that so many members of this essential branch of medicine are in this audience today.

We smile tolerantly at the woman who traces all her symptoms to her ovaries or who explains, as every woman does, that her abortion followed a fall or mis-step, but all too often our own outlook is no broader. It is my intention in this presentation to discuss certain of the errors into which the gynecologist may fall if he does not remember both his own limitations and the overlapping margins of his specialty. I shall confine myself particularly to the intestinal lesions which are overlooked, sometimes with disastrous consequences, because we tend to forget that many of their manifestations, both clinically and anatomically, may simulate those of pelvic lesions. There is surprisingly little in the literature about these diagnostic difficulties.

All errors in diagnosis are to be regretted, but some of them are more immediately serious than others because there are some conditions in which the patient's very life depends upon the promptness with which an operation is done. In such diseases as acute appendicitis, acute intestinal obstruction and perforated diverticulitis, for instance, a delay of only a few hours may turn the tide against the patient. Not many gynecologic diseases require emergency surgery, which is perhaps one reason why the gynecologic consultant is sometimes not impressed with the need for haste when he is called upon to differentiate them from other diseases with symptoms referable to the pelvis. Emergency operation is not required, but the urgency of surgery is great, when carcinoma of the sigmoid and other forms of malignancy enter the picture. Here, again, the patient's life depends upon the promptness with which surgery is done.

The diseases which I have mentioned, and others which I shall mention later, are associated with a multitude of symptoms and signs, but those which most often lead the gynecologist astray are pelvic pain, a pelvic mass and some degree of intestinal obstruction. My own experience, supplemented by a study of hospital records investigated in the preparation of this paper, indicates that diagnostic error may be on either the gynecologic or the surgical side. If the patient is admitted to a gynecologic service, the gynecologist forgets the possibility of surgical disease. If the patient is admitted to a surgical service, pelvic examination is carried out in a cursory manner if, indeed, it is carried out at all. Osler once said that the abdominal wall imposes an almost impenetrable barrier to the making of a correct diagnosis. Later he indicated the solution of half the problem when he remarked that the one thing a consultant frequently can do which has not been done before is to make a rectal examination. To that I would add, as a further solution, that he also can make a careful bimanual examination and supplement it by an equally careful rectovaginal examination.

Too much emphasis cannot be placed upon the diagnostic value of combined rectovaginal palpation after the completion of the usual bimanual examination. Only by means of rectal palpation can the posterior pelvis be adequately examined, and it is surprising that this maneuver is so generally overlooked for it serves, more than any other, to differentiate intestinal lesions from lesions of the internal genitalia. It is equally useful in the demonstration of uterine and adnexal fixation, the extent of masses in the culdesac, the presence of nodulations and fluctuation, the presence of parametrial disease and even, occasionally, enlargement of the hypogastric lymph nodes. Particularly in obese women combined rectovaginal examination sometimes furnishes the only available clue to the patient's pelvic status.

It is important, if there is any doubt at all of the findings, that rectovaginal examination be repeated after thorough cleansing of the lower bowel. Unnecessary operations are still being performed because this simple precaution has been omitted. Redundancy of the sigmoid can be extremely confusing and a bolus of feces may simulate an ovarian tumor, a uterine fibroid or even adnexal disease. But the indentation of feces on pressure, the mobility of the colon and, in particular, the

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Presented before the Jackson County Medical Society, Kansas City, on November 29, 1951, under the auspices of the Section of Obstetrics and Gynecology.

changes in the findings after defecation or mechanical cleansing of the bowel should prevent the pitfalls inherent in examination of the ptosed or feces filled colon.

ACUTE APPENDICITIS

Because acute appendicitis is the commonest of all surgical lesions, it poses numerous differential diagnostic difficulties for the gynecologist. The source of error is twofold. The first is the possibility of mistaking a pelvic lesion for acute appendicitis, a mistake which is not likely to have serious consequences. The second is the dangerous possibility of confusing a pelvic appendix, for which operation is urgently needed, with a pelvic lesion for which it may not be needed at all.

Acute pelvic appendicitis is a potentially disastrous disease. There is no pathognomonic group of symptoms and signs. A review of the literature[1] shows equally eminent authorities advancing totally different descriptions of the clinical picture. There is general agreement, however, that the pelvic appendix may rupture with little or no warning and without the presence of a single protective adhesion. In the light of these facts, it is easy to understand Brunn's[2] statement that 90 per cent of all the ruptured appendices which he saw in consultation were located in the pelvis. Especially in the aged or arteriosclerotic subject, in whom rupture of the inflamed appendix is prone to occur early, localized pelvic peritonitis, or even spreading peritonitis, may be the first indication of disease.

Differentiation requires a detailed history and a careful pelvic examination. When these data are secured, the physician must then weigh carefully the importance of pain on pelvic examination, the significance of a definite tender swelling, of fluctuation, of a bulge in the culdesac of Douglas, of induration, and of fixation of the uterus and adnexa, all of which are influenced by the severity of the disease process and the efficacy of the walling-off mechanism of the peritoneum and intestines.

At Charity Hospital of Louisiana at New Orleans, which has a large Negro population and where hundreds of women with pelvic disease are treated every year, the problem of differentiating between that disease and acute appendicitis is both frequent and serious. Over a recent three year period Boyce[3] was able to collect from this institution sixty laparotomies which he termed "unnecessary emergencies" because, although they were undertaken on the diagnosis of acute appendicitis, the pathologic process responsible for the clinical manifestations proved to be pelvic disease, ranging in severity from simple acute salpingitis to tubo-ovarian abscess, which in one instance had ruptured. In thirty-one of the sixty cases no diagnosis other than acute appendicitis was made, and in six of the thirty-one the surgeons actually committed themselves as to the state of the appendix, asserting before operation that it would be found gangrenous, ruptured, or abscessed. In twenty-seven cases the diagnosis was acute appendicitis versus pelvic disease, or pelvic disease versus acute appendicitis. In the two remaining cases the alternative diagnosis was ectopic pregnancy. Few of the twenty-five surgeons represented in this series, Boyce pointed out, had any reason to apologize for their performance. Fifteen of the women had clear-cut histories of recurrent attacks of acute pelvic disease, it is true, but such a history does not exclude acute appendicitis, and in well over half of the cases in the series the clinical picture precisely duplicated the classic picture of acute appendicitis. Furthermore, backache, which is a usual accompaniment of acute pelvic disease, was absent in all sixty cases.

In the light of these confusing and overlapping signs and symptoms, about all that one can say is that if, after proper investigation, the physician cannot decide positively that the patient is suffering from pelvic disease, then he has no choice but to subject her to exploratory laparotomy on the ground that abstinence from operation could be attended with disastrous consequences, while simple exploration should be attended with no mortality at all.

CASE REPORT[1]

A 36 year old negro woman, five days before admission to the hospital, was beaten by several men. An hour later she began to suffer from severe abdominal pain, accompanied by nausea and vomiting. Two days later she had a profuse vaginal discharge, burning on urination and fever. When she was admitted to the hospital the abdomen was generally rigid, especially in both upper quadrants, and there was rebound tenderness in the left iliac fossa. Pelvic examination revealed only uterine fibroids. The patient was treated on a gynecologic ward for nine days by bed rest and supportive measures, without improvement. Cystoscopy and blood chemical examinations revealed nothing to confirm the diagnosis of renal injury, which was then proposed. By that time the temperature had risen from the admission level of 99 F. to 103.8 F. The following day incision of a phlegmon in the right iliac region produced no pus. Death occurred three days later. Postmortem examination revealed a ruptured appendix, generalized peritonitis and a subphrenic abscess.

In this case the absence of pelvic findings (other than uterine fibroids) was the clue to the diagnosis. The diagnosis of pelvic inflammatory disease must be based on more than tenderness in the adnexal regions; tenderness, in fact, is quite as often indicative of apprehension on the part of the patient as of true pathologic changes. The diagnosis of pelvic disease requires either some degree of fixation of the uterus and its appendages or the presence of a mass in one adnexal region if not in both. This patient lost her life because those facts were not borne in mind.

ACUTE INTESTINAL OBSTRUCTION

Symptoms and signs referable to the abdomen in a patient who has had a previous laparotomy

naturally suggest the possibility of acute intestinal obstruction caused by postoperative adhesions. Not many errors are likely to be made in this type of obstruction. On the other hand, although acute intestinal obstruction is more likely to be present in a patient with a history of postoperative infection or inadequate reperitonealization after laparotomy, it is by no means uncommon after simple suspension operations. The Baldy-Webster suspension operation is seldom used today, but many women in the upper age brackets have been submitted to it and can fall victims to acute intestinal obstruction because the ileum has herniated through a defect in the broad ligament. Herniation into the culdesac is also possible after a plication of the uterosacral ligaments that was perhaps overzealous.

The usual symptoms of obstruction and the usual abdominal findings suggest the diagnosis, which can often be confirmed when careful pelvic examination permits the palpation of a dilated loop of intestine. Such a loop is often sausage shaped. It is likely to have a semicystic consistency or the consistency of fluid under tension. It is not infrequently mistaken for a twisted ovarian cyst, an error that is not disastrous since the latter is also a condition which demands immediate operation.

CASE REPORT

A 36 year old negro woman was seen twenty-four hours after the sudden onset of vomiting followed by colicky abdominal pain. The abdomen was not distended and occasional peristaltic sounds were audible. Pelvic examination revealed a soft mass posterior to the vaginal cuff and another anterior to it. Hemorrhage into an ovarian cyst was suspected. Puncture of the culdesac yielded 2 cc. of bloody fluid. When pelvic examination was repeated immediately afterward, the pelvic masses previously felt were no longer present. Meantime, microscopic examination of the aspirated blood showed that it contained feces and confirmed the clinical impression that their disappearance could be explained by unwitting puncture of bowel which had lain in the culdesac. Roentgenograms of the abdomen in the erect position further confirmed the diagnosis of acute intestinal obstruction by revealing several gas distended loops of small bowel containing gas capped fluid levels. Immediate laparotomy was performed. About 12 inches of ileum had been transformed into a closed loop by a single band of adhesions, and the pelvis contained a large amount of bloody fluid on which floated the feces pouring out of a perforation in the bowel. When the adhesion was excised, the bowel promptly resumed its normal color. The perforation was closed easily with a pursestring suture. Recovery was complicated by a culdesac abscess which ruptured into the rectum on the fourteenth postoperative day.

Aspiration of the culdesac must naturally be condemned in suspected closed loop intestinal obstruction, but in this instance it unwittingly served to emphasize the urgent character of the illness. A review of the records of intestinal obstruction at the New Orleans Charity Hospital over the last five years shows no other instance of such an error.

POSTOPERATIVE ADHESIONS

The days when one operated for postoperative adhesions are, it is good to note, almost gone, and surgery is now seldom recommended unless true obstructive symptoms are present. Colicky pain or continued intestinal cramping following laparotomy must not be ignored; either may be indicative of intestinal adhesions, which may terminate in acute obstruction. The most common site of adhesions after salpingo-oophorectomy are the broad ligament or uterine cornu. The most common sites after hysterectomy are the region of the cervical stump or the cuff of the vagina. In such cases careful bimanual examination sometimes reveals the bubbling of gas or the passage of fecal content through a loop of intestine adherent in the pelvis. Sometimes it is even possible to palpate the intestine as such. The loop, which is usually best felt with the rectal finger, cannot be displaced laterally. Omentum caked in the pelvis often leads to an incorrect diagnosis of adnexal disease or ovarian cyst.

Operation merely for the release of adhesions, even when signs of partial obstruction are present, is seldom justified. If, however, there is some other condition requiring surgery, such as an infected cervical stump or an ovarian cyst, then any intestinal adhesions which are present should be released at the same time.

CASE REPORT

A 42 year old white woman had suffered from aching pain in the right lower quadrant of the abdomen for a year when she was first seen, in November 1947. In 1933 the appendix, both tubes and a portion of the right ovary had been removed. In 1945 hysterectomy had been done. The cecum, although it was tender, emptied easily. The cervical stump was clean and the rectocele present was moderate in size. Rectovaginal examination revealed a mass in the right broad ligament about 2 cm. in diameter which was thought to be the ovary that had been left in situ. Lateral to it was soft tissue which felt like adherent intestine, pressure upon which produced low epigastric pain and nausea. It was not felt that the symptoms at that time were sufficiently severe to warrant operation.

When the patient was next seen, in January 1950, she stated that pain in the right lower abdomen had been progressively more severe for the last eight months and had been constant for the last four months. Leukorrhea, increasing in severity, had been present for three months. The pelvic and abdominal findings were essentially those previously recorded, except that chronic cervicitis with erosion was present.

Six months later the continued progression of subjective symptoms, together with the objective evidence of a rectocele and an infected cervical stump, seemed to warrant operation. When the abdomen was opened, after posterior colporrhaphy and excision of the stump of the cervix by the vaginal route, four loops of ileum were found firmly bound down in the pelvis by massive adhesions. One loop, which was acutely angulated, was densely adherent to a cyst of the right ovary as well as in the culdesac. Resection and end-to-end anastomosis were necessary because, as it was being

freed, about 4 inches of this loop were denuded of serosa. The patient made a smooth recovery and has remained free of symptoms during the sixteen months which have elapsed since operation.

In this case the production of nausea and epigastric discomfort by pressure upon a pelvic mass made it clear that the mass was intestinal and not pelvic in origin. Adherent intestine, as this experience shows, can be palpated in the pelvis, and the finding points to the existence of adhesions; free small intestine cannot be felt bimanually.

VOLVULUS AND INTUSSUSCEPTION

Volvulus and intussusception are both likely to be confused with twisted ovarian cyst and with ectopic pregnancy because both begin with a sudden onset of excruciating pain followed by vomiting and both are associated with the finding of a pelvic mass. If there is a history of the passage of mucus and blood from the rectum, the evidence points to intestinal disease. On rectovaginal examination a volvulus of the sigmoid is palpable as a tender, irregular, tubular mass, whereas an ovarian cyst is tense, smooth-walled and globular. A closed loop obstruction which presents in the culdesac of Douglas causes a bulging which resembles the bulging caused by the presence of blood in the peritoneal cavity. It has already been demonstrated, however, that to attempt diagnosis by aspiration of the culdesac in suspected obstructive disease of the intestine is to court disaster. Intussusception of the intestine is of firmer consistency than volvulus, and in its earlier stages is likely to present as a sausage shaped mass. Pelvic examination is always useful in intussusception of the ileum and sigmoid for the lesions can often be demonstrated vaginally.

The age at which these various conditions occur is a useful diagnostic point. Intussusception is predominantly a disease of young infants. Volvulus is predominantly a disease of late adult life. While twisted ovarian cyst may occur at any age period, ectopic pregnancy is always a disease of women in the child bearing years. These generalizations are not always correct, but they hold in enough cases to make the age of the patient an important consideration in making the differential diagnosis.

CASE REPORT

A 24 year old white woman, three days before admission to the hospital, had a sudden onset of acute pain in the lower abdomen, followed by vomiting. Her menstrual history was without incident and her appendix had been removed four years before. The abdomen was moderately distended. Tenderness, which was generalized, was more marked in the right lower quadrant where a firm cystic mass, about 7 cm. in diameter, could be palpated. There was moderate pain on manipulation of the cervix. The mass felt abdominally could be made out on pelvic examination to the right of and above the uterine fundus. It was cystic, elliptical and relatively fixed. Laparotomy, undertaken on a diagnosis of twisted ovarian cyst versus acute intestinal obstruction, revealed an ileoileal intussusception headed by a pedunculated, fibrinous hemangioma measuring 3 by 2 cm. It was necessary to resect 48 cm. of ileum which had become gangrenous. Recovery was uncomplicated.

In this case there was a complete absence of symptoms referable to the intestine and the pelvic findings were typical of twisted ovarian cyst. Fortunately, the latter condition constitutes an emergency in itself and the diagnostic error was therefore of only academic significance.

DIVERTICULITIS OF THE COLON

The findings in diverticulitis of the lower colon, which include pain, fever, sometimes slight rectal bleeding and the presence of an indefinite mass in the left lower quadrant of the abdomen, resemble those of perforating carcinoma of the sigmoid. Secondary adnexal involvement may be a consequence of secondary infection; for anatomic reasons it is usually limited to the left side. Vaginal examination reveals a tender, adherent mass high in the left pelvis which is not like the circumscribed mass typical of primary salpingo-oophoritis. Obstruction sometimes occurs, but perforation and abscess formation are the most frequent complications. Pelvic abscesses secondary to acute diverticulitis point in the recto-uterine fossa in about half of all cases and should always be looked for if diverticulitis does not respond to standard medical measures.

Philpott,[4] in a discussion of surgical emergencies in gynecology and obstetrics, mentions diverticulitis as among the most difficult to differentiate. Anyone who has ever tried to make the differential diagnosis will agree with him. The fact that this is chiefly a disease of persons past the menopause is a useful point to remember, though age does not necessarily exclude gynecologic lesions. A barium meal is helpful in uncomplicated cases but must not be given if perforation is suspected. Similarly, if a barium enema is employed, it must be given with the utmost caution in acute diverticulitis, whether or not perforation is thought to have occurred.

It would seem, however, that the chief reason why pelvic findings are so seldom reported in diverticulitis of the sigmoid is that this is a condition which ordinarily occurs in elderly women, in whom the surgeon expects no pelvic disease and upon whom, therefore, he makes no pelvic examination. In fourteen cases of diverticulitis observed at the New Orleans Charity Hospital over a recent two-year period, pelvic examination was omitted in seven.

CASE REPORT

A white woman, 51 years of age, had had recurrent sharp pains in the left lower abdomen for the last six months. For a week she had suffered from constipation, frequency of urination and a sense of pressure on

the bladder. A gangrenous appendix, together with the right tube and ovary, had been removed twenty-five years earlier, and an artificial menopause had been induced by the use of radium seven years earlier. Abdominal palpation revealed tenderness in the left lower quadrant and a suggestive mass in this area. The cervix could not be probed for more than 1.5 cm. A globular mass filled the culdesac. It was tender, semicystic and fixed, and seemed continuous with the uterus.

Operation, which was undertaken on a diagnosis of left ovarian cyst versus hematometra, revealed numerous loops of ileum adherent to the anterior abdominal wall. The left adnexa, which were atrophic, were adherent to the sigmoid at the site of an old ruptured diverticulum. The mass which had been felt in the pelvis consisted of dilated and adherent sigmoid. The appendices epiploicae were indurated and friable over the 4 cm. segment of bowel which surrounded the site of the rupture. After a frozen section from this area had been reported as showing no evidence of malignancy, the ruptured diverticulum was inverted and left salpingo-oophorectomy was performed. Six other diverticula of the sigmoid were carefully examined but showed no abnormalities.

In retrospect, it seems that a barium enema would have established the diagnosis of diverticulosis of the sigmoid and might even have shown the point of rupture. It was omitted because intestinal disease was not thought of in the differential diagnosis. Another diagnostic omission was failure to dilate the cervix, which should always be done when hematometra is suspected.

CARCINOMA OF THE SIGMOID

The average woman is always relieved when she is told after a periodic physical examination that she does not have cancer of the breast or the genitalia. Would she be so complacent if she were informed that vital statistics of the United States for a recent year show that 17 per cent of the female cancer deaths were caused by cancer of the colon and rectum? That is exactly the percentage of deaths caused by uterine cancer. Since carcinoma of the alimentary tract accounts, in all, for approximately 40 per cent of cancer deaths in women, it behooves one, while keeping his eyes trained on the search for cancer in the female genitalia, also to be alert to detect early cancer in the alimentary tract.

The common symptoms of carcinoma of the rectosigmoid, which is likely to be confused with ovarian malignancy and endometroiosis, are alternating constipation and diarrhea, pain and slight rectal bleeding. An increased urge to defecate is typical. The stools are increasingly small in caliber and, as obstruction becomes more complete, episodes of nausea and vomiting occur. Whether or not these symptoms are present, the finding of a firm, nodular, perhaps fixed mass in the left pelvis or in the culdesac is an indication for studies by barium enema and sigmoidoscopy.

Although carcinoma of the colon frequently involves the genitalia, this possibility is seldom mentioned in the literature and it is not surprising that it is also ignored clinically. Blunt and Waugh,[5] in discussing thirty-seven cases with gynecologic involvement treated at the Mayo Clinic between 1908 and 1946, pointed out that apparently only one previous paper, by Sugarbaker,[6] had been published on this subject. Sugarbaker reported the removal of a portion or all of the female genitalia in twenty-three of 132 operations for malignancy of the large bowel, either because of extension of the malignancy or because the structures were so densely adherent that dissection did not seem feasible. Actually, laboratory examination showed malignant involvement in only eleven cases, though additional sections, Sugarbaker noted, might have increased the proportion. Blunt and Waugh's figures show much the same trends. In the thirty-seven similar operations which they reported, carcinomatous involvement was found by the laboratory in only nineteen instances, the ovaries, tubes and uterus being involved in the malignant intestinal process in that order of frequency. The size and other gross characteristics of the primary growth furnished no clue as to whether the involment of the genitalia was malignant or merely inflammatory.

Part of the reason for failure to diagnose gynecologic involvement in carcinoma of the sigmoid undoubtedly lies in failure to carry out pelvic examination. Gynecologic consultation was requested only nine times in forty-four cases of this condition reviewed from the records of the New Orleans Charity Hospital, yet in seven of the nine the gynecologist found that extension of the malignancy to the genitalia had occurred. Four of eight other patients who were thought at operation to have only inflammatory involvement of the uterus and ovaries were later found, when the specimens were examined in the laboratory, to have an extension of the malignancy also.

CASE REPORT

A 34 year old white woman was first seen in October, 1947 with a history, covering the last month, of severe pain across the lower abdomen, chills, fever to 101 F., and nausea and vomiting. She also complained of anorexia, chronic constipation, low backache and a 20 pound loss of weight. Over the last year her menstrual cycle had changed from twenty-one to fourteen days. She had been treated elsewhere with penicillin, on the diagnosis of ovarian abscess, without relief. A tender mass, 10 by 7 cm., was palpable in the left lower abdomen in the region of the sigmoid. Pelvic examination revealed the left adnexa to be somewhat fixed but not enlarged. Barium enema showed a filling defect in the sigmoid.

Laparotomy was undertaken without delay on the diagnosis of carcinoma of the sigmoid, which proved to be correct. Resection with end-to-end anastomosis was performed and the left tube and ovary were removed also because of inflammatory adhesions. Two lymph nodes from the mesentery of the colon showed metastatic carcinoma.

Five months after this operation, although the patient had gained 40 pounds, recurrence of symptoms and the roentgenologic findings pointed to recurrence

of the malignancy. A second laparotomy revealed only a few adhesions in the region of the anastomosis and no apparent involvement of the lymph nodes.

Pelvic examination in December 1949 showed that the right ovary measured 8 by 5 cm., although menstruation had been normal since the first operation. Complete abdominal hysterectomy and right salpingo-oophorectomy were performed for the now obvious extension of the malignancy to these organs. The laboratory reported that the adenocarcinoma present in them was microscopically identical with that present in the resected sigmoid. The patient died seven months later, with generalized metastases.

The lessons of this case are obvious. Before we saw the patient she had been given penicillin, almost automatically, it would seem, without any real attempt to diagnose her disease. More important, the pelvic operation performed at the third laparotomy should have been part of the first procedure. If it had been the patient's chances of survival would certainly have been increased.

METASTATIC CARCINOMA OF THE INTESTINE

Carcinoma of the sigmoid is not the only type of intestinal malignancy which may invade the pelvic structures. Metastatic carcinoma is relatively frequent. A silent gastric or intestinal malignant process must be sought for whenever a discrete nodule is found in the culdesac of Douglas, particularly if there are no abnormalities of the internal genitalia to suggest a primary pelvic focus. The investigation is frequently anything but simple. Even after one or more roentgenologic studies with a barium meal the diagnosis may remain obscure, and it is sometimes not possible at laparotomy to determine the location of the lesion. Because of these difficulties it is strongly urged that in doubtful cases in which biopsy of the culdesac mass is feasible, this procdure be resorted to before laparotomy is undertaken.

It is now recognized that the secondary ovarian carcinomas known as Krukenberg tumors can originate not only in primary carcinoma of the stomach but in malignant processes anywhere in the intestinal tract. As in other types of ovarian malignancy, there are no early diagnostic symptoms or signs. Often a mass in the lower abdomen, which the patient feels herself, is the first indication of disease. Invasion of the uterus is usually heralded by menstrual irregularities or postmenopausal bleeding. Ascites, which is a late manifestation, commonly indicates spread to the peritoneum. The true nature of a Krukenberg tumor is seldom established before operation, though an alert gynecologist may suspect it from such clues as the oval or kidney shape and the semicystic consistency. Another diagnostic point is that these tumors are bilateral in 80 per cent of all cases.

Just as intestinal malignancy may invade the genital tract, so may pelvic malignancy spread to the intestinal tract. According to Jackman and Hilsabeck,[7] carcinoma of the ovary is the most frequent pelvic lesion to take this course. They found five cases in a two year period at the Mayo Clinic, in all of which previous operation had been performed. In three instances bilateral salpingo-oophorectomy had been performed for papillary mucous cystadenocarcinoma, grand 1, but it could not be determined what had been done in the other two cases, though it was suspected that the indication for surgery had been a malignant tumor of the ovary. Over the same two year period these observers also found invasion of the intestinal tract by a carcinoma of the vagina, a carcinoma of the cervix and a carcinoma of the uterine fundus.

INTESTINAL PARASITISM

That gynecologic symptoms and signs may originate in intestinal parasitism is another consideration which gynecologists are inclined to forget. Uncinariasis (hookworm disease) is fortunately on the decline, but in parts of the country in which it still occurs, one ought to bear it in mind when confronted with a patient who has a marked anemia associated with oligomenorrhea or actual amenorrhea. Pruritus ani or vulvae, which is worse after retiring at night, may be caused by pin worm infestations. Diagnosis is confirmed by inspection of the perianal area and the finding of the thread like worms *(Enterobius vermicularis)*, which are best demonstrated with the aid of a flashlight, after the patient has retired for the night. The eggs of the parasite can be found on cellophane swabs taken from the anal area.

Amebiasis, whose incidence in the general population is now estimated at 10 per cent or more, is one of the most troublesome intestinal diseases encountered in tropical and semitropical climates. It presents a protean, and at times a bizarre, picture. Amebic dysentery, as such, is not common in the United States. When it does occur, the symptoms and signs are too prominent to be ignored. Amebiasis is usually characterized by bouts of diarrhea alternating with constipation, pain or tenderness in the cecal region and tenderness and slight enlargement of the liver. This is, however, an insidious and obscure disease whose numerous manifestations may be overlooked if all the attention is centered on the intestine, to which, in many instances, no symptoms at all are referable. The patient who suffers from pain in the right side, backache, constipation, or constipation alternating with diarrhea, nausea and malaise, and who experiences an aggravation of these symptoms at the time of menstruation, should be studied with amebiasis in mind, whether or not she also suffers from essential dysmenorrhea or some other gynecologic complaint. Ulceration of the cervix and vagina secondary to amebiasis is another possibility which is seldom borne in mind, though the fact that Weed and Weinstein[8] have observed eleven such cases over a five year period suggests

that it may be more common than is generally supposed.

This is far too broad a subject to enter into fully in the limited time at my disposal, but as one who practises in a semitropical community in which amebiasis is common, I can say most emphatically that my personal experience suggests that the possibility of this disease should be remembered by all gynecologists. If the patient with suspicious symptoms is thoroughly investigated from this standpoint, and is treated accordingly, a surprising number of pelvic invalids and sufferers from intractable dysmenorrhea will be promptly relieved, just as the similar identification and correction of other systemic diseases will often accomplish similar results.

CASE REPORT

A 30 year old white woman complained of dysmenorrhea, sterility and recurrent severe, cramping lower abdominal pain. The cecum, which was readily palpable, was tender during and between the attacks but rigidity was never present and the blood picture was always within normal limits. There were no intestinal disturbances, but amebiasis was nonetheless suspected, and on the third stool examination cysts of *E. histolytica* were demonstrated. The patient's husband was also found to have amebiasis.

Dysmenorrhea and abdominal pain, although improved, did not disappear entirely until some eight months after appropriate amebicidal treatment had been begun. Over the five year period which has elapsed since this patient was first seen, she has remained well, although in the interim moderate endometriosis of the right ovary and uterosacral ligament has made its appearance. A divorce three years ago has eliminated the necessity of treating the sterility which was one of the original complaints.

Appendectomy would certainly not have cured this patient, and operation for endometriosis of such moderate degree would scarcely have been justified if sterility had continued to be a problem. Incidentally, the husband, after two years of marriage to a second wife, has still had no children.

ENDOMETRIOSIS

The increasing frequency of endometriosis, particularly in private patients, makes this disease of increasing importance to the gynecologist. The fact that the rectosigmoid is involved to some extent in approximately 10 per cent of all cases also makes the disease of importance to the surgeon and often introduces confusing diagnostic problems. Except for the appendix and, occasionally, the ileum, the remainder of the bowel seems to escape involvement.

The patient with endometriosis usually gives a history of progressive dysmenorrhea, menstrual irregularities and sterility. Pelvic examination usually reveals shotty nodules in the culdesac and on the uterosacral ligaments.

Intestinal symptoms may result from adhesions to the rectosigmoid from the endometriotic lesions between it and the uterus, or may be caused by direct invasion of the outer coats of the bowel. Pain on straining at defecation is often annoying. When either the uterosacral or rectal structures are involved, the patient will often complain that at the time of her period she has a frequent, though unsuccessful, desire to defecate. She will seldom make this particular complaint, however, in the absence of direct questioning.

Intestinal obstruction, though uncommon, is a definite possibility. McGuff and his associates[9] observed three instances of obstruction of the ileum in forty-eight cases of endometriosis treated at the Mayo Clinic, and were able to collect thirteen similar cases from the literature. The correct preoperative diagnosis was made only three times. Most often the condition was considered to be acute appendicitis with ileus, but carcinoma and carcinoid of the ileum and intestinal obstruction caused by adhesions were considered possible diagnoses in one case each. In the remaining cases no preoperative diagnosis was made.

Rectovaginal examination is the best method of demonstrating lesions of endometriosis on the uterosacral ligaments, the posterior portion of the uterus and the peritoneum of the culdesac. It is also the best method of demonstrating lesions involving the rectum. If these hard, nodular masses seem to involve the rectal mucosa, they must be differentiated from silent carcinoma of the rectum by proctoscopic examination, barium enema or both methods. The essential point of differentiation is that mucosa overlying endometrial tumors of the intestinal tract remains normal in appearance.

CASE REPORT

A 36 year old white woman complained of intermittent cramping abdominal pain for a year. For the last month the pain had been more frequent and more severe. Three days before she entered the hospital it had become acute and had been accompanied by vomiting. She had suffered from moderate dysmenorrhea since the onset of the pain, but there had been no menstrual irregularities. She had been married eleven years and had had no children, in spite of desiring them. There was moderate tenderness in the right lower abdomen without rigidity or distention.

Laparotomy, undertaken on a diagnosis of chronic appendicitis, disclosed marked endometriosis of the pelvic structures. Both ovaries, which were adherent to the posterior surface of the broad ligaments, contained gross lesions. A lesion 1.5 cm. in diameter involved the antimesenteric border of the ileum 3 cm. from the ileocecal junction and was responsible for a partial obstruction, which undoubtedly accounted for the patient's symptoms. Smaller areas of endometriosis were noted on the superior surface of the bladder, in the culdesac and on the uterosacral ligaments, sigmoid and cecum. The smaller areas were excised and cauterized with the electrosurgical unit. The bowel affected by the larger lesion was resected. The appendix was removed. Convalescence was uncomplicated.

Since the operation the patient has suffered less from dysmenorrhea. Contraceptives have been used to prevent pregnancy.

Though no pelvic examination was recorded in

this case, the surgeon apparently suspected that pelvic disease might be present, since a subumbilical incision is not ordinarily made at an operation for chronic appendicitis alone. The complication encountered bears out the contention that gynecologic surgeons should be qualified to perform intestinal surgery when the need arises.

INTESTINAL COMPLICATIONS OF GYNECOLOGIC DISEASES

Infections of the Internal Genitalia.—Ileus is the most common intestinal complication of both gonorrheal and postabortal pelvic infection. In preantibiotic days it was frequent and severe. Now it is much less common and, except in frank peritonitis or in association with large ovarian abscesses or pyosalpinges, it is seldom more than mild or transient.

Intestinal obstruction is also no longer a frequent complication of pelvic infection. In a recent study of ninty-three persistent tubo-ovarian abscesses at the New Orleans Charity Hospital, Gordon Johnson[10] did not find a single instance in which it was present either before or after operation.

Patients with tuberculous peritonitis frequently arrive on gynecologic wards with the diagnosis of ovarian cyst. The differential diagnosis may be difficult because of the presence of ascites and encysted peritoneal fluid. Bilateral enlargement of the tubes, fixation of the adnexa, low grade fever and ascites should always introduce the suspicion of pelvic tuberculosis with peritonitis. Abdominal paracentesis is a useful diagnostic method in ascitic cases, but should be carried out carefully since the intestines may be adherent to the parietal peritoneum and thus lie directly in the path of the puncture. If this mishap occurs, there is no cause for alarm since such punctures, curiously, heal promptly without fistula formation.

Uterine and Ovarian Neoplasms.—Uterine fibroids of considerable size are now relatively infrequent, but I venture to say that in the South, in Negro women, tumors of a size seldom seen anywhere else in the United States are still being seen. It has always been a matter of surprise to me that intestinal symptoms are relatively scarce with both uterine fibroids and ovarian tumors. On the other hand, if the tumor is located in the culdesac of Douglas, pressure symptoms may bring the patient to the physician before any other symptoms develop. Sometimes, especially when the uterus is in retroversion, the chief symptoms may be a sense of weight or heaviness in the pelvis, a sensation of pressure on the rectum and constipation. Signs and symptoms of obstruction may be caused by degenerative changes in the tumor, rupture or secondary infection with adhesions, though the obstruction will seldom be complete and emergency surgery will therefore seldom be necessary.

The size and location of most of these tumors preclude the securing of accurate information concerning the status of the intestines by the usual vaginal examination. If obstruction is complete, the demonstration of fluid levels by roentgenograms will confirm the diagnosis. If it is only partial, a barium enema will demonstrate extrinsic pressure on the bowel.

Ectopic Pregnancy.—It is almost impossible to overlook the classical type of ectopic pregnancy, which is dramatic and catastrophic. The insidious variety, or the variety which passes into the nonacute state because of delay by the patient or the physician, offers numerous diagnostic difficulties. In this stage, the predominant symptoms are frequently intestinal. Nausea, vomiting, abdominal pain, distention and obstipation may completely overshadow the history of a missed period, irregular vaginal spotting or sudden abdominal pain while straining at stool. Blood in the peritoneal cavity, as is well known, may produce varying degrees of adynamic ileus. Peritonitis from seconday infection of an ectopic pregnancy ranks next to hemorrhage as the cause of death when surgery is not done promptly, and intestinal obstruction ranks third.

Abdominal tenderness, pain on manipulation of the cervix and the palpation of a doughy mass in the culdesac or the adnexal area should arouse the suspicion of ectopic pregnancy. If the diagnosis cannot be established otherwise, aspiration of the culdesac, with the withdrawal of old blood or blood which fails to clot, will often settle the matter. Beacham and his associates[11] reported that the use of this method in 89 per cent of the patients with ectopic pregnancy treated at the New Orleans Charity Hospital in 1950 resulted in 89 per cent of correct diagnoses.

FOREIGN BODIES

The list of foreign bodies left in the abdominal cavity or in the vagina varies from needles to scissors and from sponges to towels. The diagnosis is ordinarily extremely confusing unless the possibility is suspected. In such cases the postoperative course is usually stormy. Intestinal symptoms predominate if the foreign object is a large cotton cloth. Ileus of varying degrees, vomiting, distention and fever are present alone or in combination, though in some cases symptoms may not occur for several months. The development of a deep abscess, persistent purulent drainage from the wound, intestinal obstruction and postoperative fistulas are possible complications.

Diagnosis is possible by means of roentgenograms if radio-opaque threads have been woven into the sponges or if metallic rings have been attached to the cloths used. Personally, I do not permit the use of 3 by 3 sponges in abdominal operations. Instead, I prefer small strips (so-called vaginal rolls) which can be more easily checked and counted.

SUMMARY

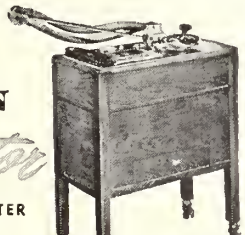
Every specialist stands in danger of forgetting that his own specialty does not encompass the whole human body. Gynecologists are not immune to this risk and to the errors which may stem from it. Symptoms and signs which seem directly referable to the pelvic organs may actually originate in diseases of the intestine, some of which require emergency surgery, some urgent surgery, and some medical measures. The differential diagnosis of these various lesions is discussed and illustrative case reports are presented.

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From where I sit *by* Joe Marsh

Well, What Do You Know?

Do you believe in a bunch of old tales about lightning—about how it's attracted by cats or the warmth of cattle . . . how it never strikes in the same place twice . . . or how it's liable to turn milk sour? Lots of people often do—but they're wrong.

Dad Hawkins inspired this column for me today. He's really studied up on lightning since his own cow barn was struck that time.

"Trouble is, most of us don't know half enough about the subject," Dad says. "And about half of what we *do* know about lightning is false!"

From where I sit, Dad's statement applies to a lot of things besides lightning. Too many people think they *know what's best for the other fellow. Like those who would tell a man how to practice his profession . . . or those who resent our right to enjoy a friendly glass of beer if and when we choose. Opinions based on misinformation and prejudice, instead of being "grounded" on true facts can cause more damage than lightning ever did.*

Joe Marsh

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Clinical Conference

THE DETECTION BY MICROFILM OF LUNG CANCER IN MASS SURVEYS FOR TUBERCULOSIS

PAUL MURPHY, M.D.
ST. LOUIS

PAUL MURPHY, M.D.: Today's conference begins with a patient, a mechanic of 45, who was entirely asymptomatic at the time bronchiogenic carcinoma was originally detected during chest microfilm surveys in the City of St. Louis.

CASE REPORT

Asymptomatic Bronchiogenic Carcinoma

(E. Coffman, M.D., R. E. Fox, M.D., J. L. Lucido, M.D.)

Case 1. A mechanic, aged 45, Mr. W. M., in May 1950 obtained a free x-ray of his chest in a mobile unit. At the time he was without symptoms. A letter advised him to consult his physician for a shadow appearing in the lung (figure 1), and a 14 by 17 inch film confirmed the finding in the upper left lobe of a "coin shadow."

Because he was asymptomatic, he did nothing for seven months.

In December 1950 he spat blood, and sought treatment. The shadow had grown, but physical examination was normal, as was exfoliative cytology, bronchoscopy and bronchoscopic biopsy.

On March 12, 1951 he was operated upon. The thorax was explored and frozen section revealed the tumor malignant. A total left pneumonectomy was performed. Paraffin sections proved the tumor carcinoma (epidermoid), with no metastases in any of eight hilar lymph nodes removed surgically.

R. E. FOX, M.D.: This patient first consulted me in January 1951 saying that seven months before, he decided to start the parade off when he saw the mobile unit parked near his garage, and no one volunteered to have the first chest film for tuberculosis taken. He had no symptoms, whatever, at the time and was surprised a week later to receive a letter urging him to consult a physician for an abnormal shadow detected in the microfilm. His physician confirmed the finding of a shadow in the lung, and said they would watch it.

Not for six months was anything done then, returning from work, in December 1950 he spat red in the snow. It happened again that afternoon, so he resolved to quit smoking and to return to his physician. Not for another month was treatment sought, not before he began to spit blood daily. I sent him to Firmin Desloge Hospital.

The work-up revealed the lesion in the upper lobe of the left lung (figure 1). Dr. Lucido and I decided exploratory thoracotomy necessary and the diagnosis was made on frozen section at thoracotomy, and the entire left lung removed by Dr. Lucido. The patient is today clinically well and back working.



Reproduction of the microfilm of patient 1 while asymptomatic showing shadow in the left lung.

ESTHER COFFMAN, M.D.: Figure 1 shows the microfilm as I first saw it in May 1950 with the suspicious shadow in the left upper lobe.

E. L. KEYES, M.D.: Overholt[1] claims bronchiogenic carcinoma the most readily detectable of any internal type of cancer because in its "silent" stage it produces on microfilm a shadow which can accurately be labeled cancer. The silent stage lasted seven months in this patient.

DR. COFFMAN: Microfilm of the 34 millimeter size just shown is not in my opinion a diagnostic film. Any abnormal shadow is reported as either suggestive of tuberculosis or as suggestive of other lung disease. Not before taking a 14 by 17 inch x-ray film, can one evaluate the condition definitely.

It will be seven years in November, 1951 since the 1501 S. Grand Blvd. branch of the City of St. Louis Health Division was opened under J. Earl Smith, M.D., Health Commissioner. During the seven years 76,000 people have been screened there on microfilm and many chest tumors have been found in that time.

C. J. CHERRE, M.D.: The standard 14 by 17 inch x-ray film taken on patient 1 in June 1950, a month after his original microfilm, showed a "coin shadow" the size of a dime in the left upper lung, suggestive of malignancy, with no other

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Tumor Teaching Conference No. 131, June 14, 1951, St. Louis University School of Medicine, and Firmin Desloge Hospital.

Aided in part by Grant CT 619 USPHS, and Missouri Division, American Cancer Society, Inc., and by Missouri State Division of Health.

abnormalty appearing elsewhere in either lung field. During the six months interval between taking the two standard sized x-ray films the tumor enlarged.

The patient was presented to the group.

A. N. Vaughan, M.D.: Did you lose any weight before you spat blood?

Patient: No, I gained weight. I was able to work thirty-six hours straight up to the day I came into this hospital in March 1951 for operation.

C. R. Hanlon, M.D.: Did you notice discomfort in your chest?

Patient: No, I never had any pain.

Dr. Hanlon: Was there a sensation of anything in there?

Patient: No, not even a cough.

J. L. Lucido, M.D.: This patient required exploratory thoracotomy with frozen section for diagnosis preceding the total left pneumonectomy. Note how small a scar remains following thoracoplasty postpneumonectomy. The patient now works every day.

L. J. Flance, M.D.: What type was the carcinoma histologically?

J. P. Wyatt, M.D.: Epidermoid carcinoma, Grade II.

Dr. Murphy: One can conclude that this diagnosis was made during the asymptomatic stage in this patient. One can take the patient's word for that.

Patient 2 will now be discussed. Unlike patient 1, patient 2 was symptomatic at the time his original microfilm was taken.

Symptomatic Bronchiogenic Carcinoma

(E. Coffman, M.D., M. Davis, M.D., P. Murphy, M.D., J. Lucido, M.D., V. Moragues, M.D., I. Brockland)

Case 2. Mr. V. M., a 65 year old shoe-factory worker, obtained a chest microfilm on April 12, 1950, because for four months he had pain in the right shoulder. A shadow appeared in the right lung field.

Suspicious cells in the sputum were found cytologically. Bronchoscopically a bleeding constricting lesion was seen at the orifice of the right upper lobe bronchus; biopsy proved epidermoid carcinoma.

The entire right lung was removed July 13, 1950. Histologically metastases were demonstrated in four of ten lymph nodes removed surgically. This is now the eleventh postoperative month. (Patient died in eighteenth postoperative month, October 14, 1951.) Necropsy showed massive pulmonary embolism and metastatic carcinoma to superior vena cava partially obliterating lumen, metastases to right pleura and left kidney.

M. W. Davis, M.D.: Patient 2 was sent to me after microfilm detection of a lung shadow by the mobile unit. He was told that he had a spot. A 14 by 17 inch film showed a shadow in the right hilus with infiltration in the right lower lung field. He was coughing and bringing up sputum so that at first I thought he might have tuberculosis but was never able to find tubercle bacilli in the sputum. Physical findings were limited to a few rales in the base of the right lung. Since it was not possible to make a diagnosis of pulmonary tuberculosis, it was decided he should have bronchoscopy at Firmin Desloge Hospital.

Dr. Lucido: I am not sure that everyone thought patient 2 had carcinoma until this was proven by bronchoscopy and biopsy. Not until one is sure a patient has carcinoma either by bronchoscopy, biopsy or by frozen section in the operating room, does one proceed with radical pneumonectomy.

Dr. Cherre: The films on patient 2 showed essentially what Dr. Davis has reported. It was a question as to whether the diagnosis was tuberculosis and not cancer up to the time Dr. Lucido definitely proved it to be cancer by bronchoscopic biopsy.

Dr. Wyatt: In patient 2, four of ten lymph nodes were invaded by metastatic carcinoma histologically so that his prognosis for five-year survival is poor. He is alive, now in his eleventh postoperative month. (Patient died seven months after this conference.)

The primary lesions both in patient 1 and in patient 2 are similar in histology, both being of the epidermoid of squamous cell type. The prognosis in patient 1 is far better than in patient 2 because no metastases were found histologically in any of the eight lymph nodes of patient 1. (Patient 1 remains alive with metastases, now one year postoperatively.)

Dr. Murphy: What about cancer cells invading the blood stream to set up metastases without involvement of the regional lymph nodes?

Dr. Wyatt: I think that is a possibility.

Dr. Flance: In expert hands, sputum examination for tumor cells has been proved to be of value in the diagnosis of bronchiogenic carcinoma, though there have occurred a few disappointing false positive readings. Cytology is a good aid in arriving at the presumptive diagnosis of lung cancer.

Reviewing published figures one gains the impression that a large number of patients are explored by thoracotomy and found not to require pneumonectomy, because cancer was not found. Personally, I think a patient is better off to be symptomatic rather than asymptomatic when operated on. Those patients who observe symptoms early in the course of their disease are the ones in whom a long term survival can be expected because these are usually slow growing bronchiogenic squamous cell carcinomas; whereas, the asymptomatic cases are usually the round cell or

adenocarcinomas which give rise to symptoms late and whose prognosis is almost uniformly fatal.

The five-year survival rate in a charity, general hospital is bad and I know of no five-year survivor of bronchiogenic carcinoma in the St. Louis City Hospital. At Bellevue Hospital in New York City there was reported one five-year survivor in about 360 patients in 1949.

DR. KEYES: Dr. Paul Bettonville at Firmin Desloge Hospital, which is largely a charity, general hospital, found no five-year survivors of twenty-three patients from 1933 to 1946.

The two patients presented today are the first detected by microfilm in Firmin Desloge Hospital and one may anticipate seeing perhaps one or two a year thus detected in the future.

The detection of lung carcinoma should go hand-in-hand with mass chest surveys for control of pulmonary tuberculosis. The St. Louis *Post-Dispatch* on June 4, 1951, reported 211 chest abnormalities found by the mobile x-ray unit of the Tuberculosis and Health Society of St. Louis in five weeks of a survey in this city. Mr. Clem Strockman, Society President, said eighty-seven of 6,535 chest x-rays taken indicated tuberculosis and 124 showed other abnormalities. Persons suspected of disease are notified and receive follow-up visits from nurses of the St. Louis City Health Department.

Overholt has obtained a 11 per cent five-year survival rate for symptomatic persons with bronchiogenic carcinoma. He claims a five-year survival rate of 75 per cent is to be expected for asymptomatic persons diagnosed on yearly x-ray.

Chest screening is economical, continues Overholt, because one unit of technicians can screen more than 500 persons daily, a screening process less involved than almost any other routine laboratory procedure. The detection of cancer in other internal sites requires that a physician examine the patient, thus imposing limitations from the standpoint of physician-personnel time, as Overholt contends.

Scammons is quoted as having found eighty-five proven lung carcinomas among 343 persons with abnormal lung shadows. I think today's conference will be a success if it will merely serve to make the physician aware of lung cancer as a possible cause of a shadow on an x-ray film, whether the film be standard size or microfilm.

DR. MURPHY: It is more difficult to determine the results of the detection of pulmonary carcinoma than to determine the results of the detection of pulmonary tuberculosis because carcinoma is not a reportable disease whereas tuberculosis is reportable.

It is obvious that the earlier detection of bronchiogenic carcinoma will yield a higher rate of five-year survival than the present rate for this condition.

In Overholt's series the present rate of five-year survival is 11 per cent of patients who were symptomatic when operated upon. Overholt's estimate for patients who were asymptomatic when operated upon is 75 per cent, he states, and his statement puzzles me. After rereading the article I think I know what he means. He means that the five-year survival rate ultimately should attain 75 per cent because when he operates upon asymptomatic persons who have reached him as the result of mass surveys, 75 per cent of these persons have no invasion by carcinoma of the regional lymph nodes, so he assumes that 75 per cent of them ultimately will survive five years or longer postoperatively.

Experience shows that mass microfilm surveys of city dwellers yields from one to eight suspects of bronchiogenic carcinoma per 10,000 surveyed. Furthermore, of the one to eight persons suspected of bronchiogenic carcinoma, from one to two are ultimately diagnosed carcinoma histologically[1] microfilm survey of 386 men over 45 working in industry revealed a 2.4 per cent incidence of proven bronchiogenic carcinoma.

In Philadelphia they advocate a policy which well might be followed elsewhere, namely, of recording abnormal chest films not only as suspicious of tuberculosis but, in addition, as suspicious of malignancy. Their criteria are: a parenchymal mass, obstructive emphysema, mediastinal enlargement and atelectasis, or soft infiltration or cavity associated with mediastinal involvement or shift.

Consider the situation when patients reach the surgeon. Overholt reports that his rate of resectability was 100 per cent for asymptomatic individuals; whereas, among his symptomatic bronchiogenic carcinoma patients the rate was only 30 per cent. His incidence of regional lymph node invasion for symptomatic individuals ran up to 89 per cent, I think; whereas, the incidence of node invasion for asymptomatic individuals was only 25 per cent.

These figures show what can be accomplished by getting persons with bronchiogenic carcinoma to the surgeon early, and indicates a means for getting them there early—mass x-ray surveys. Patient 1 serves to emphasize the point in today's conference.

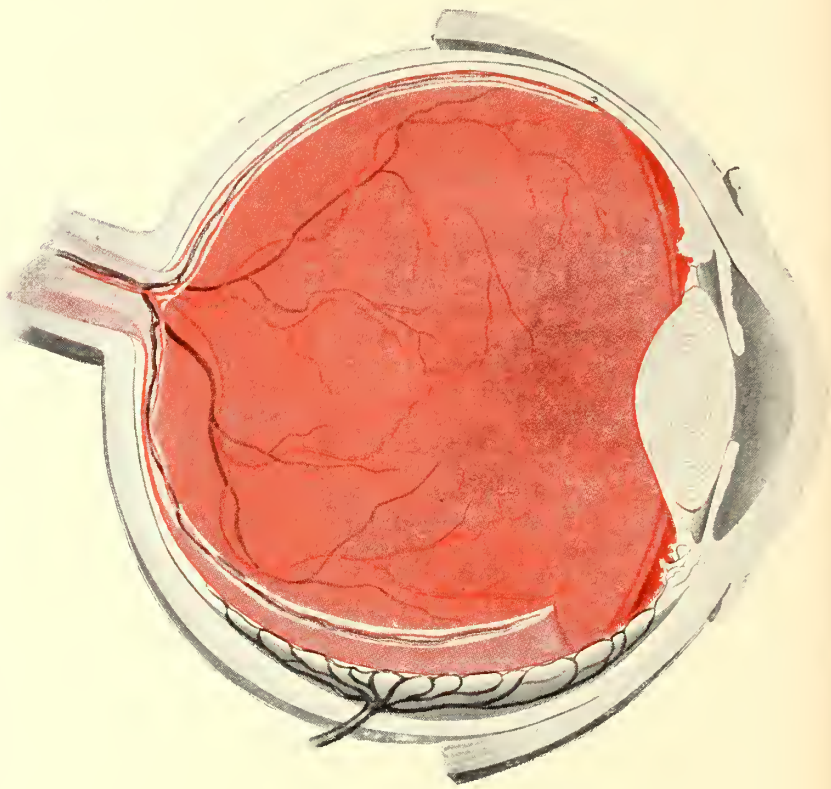
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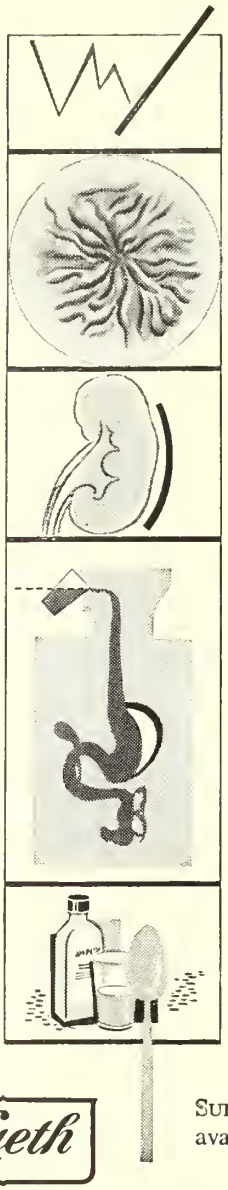
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Case Reports

EXTREME EOSINOPHILIA IN LIBMAN-SACKS DISEASE WITH LUPUS ERYTHEMATOSUS DISSEMINATA

REPORT OF A CASE

HENRY K. OETTING, M.D.
ST. LOUIS
AND
JACK A. GREGORY, M.D.
ST. LOUIS

THE ENTITY of atypical verrucous endocarditis was first described by Libman and Sacks in 1924. Since then there have been many reported cases of lupus erythematosus disseminata with or without an associated atypical verrucous endocarditis. In these cases, eosinophilia was not a prominent part of the syndrome. The case reported meets the pathological criteria of Libman-Sacks disease with lupus erythematosus disseminata in which there was an extreme and persistent eosinophilia. A search of the literature failed to disclose any similar case. The case is reported because of this unusual eosinophilia.

CASE REPORT

E. W., a 60 year old white man was first admitted to a hospital in March of 1947. The principal observations, at that time, were fever, rales in both lung bases, slightly enlarged heart with an apical systolic murmur and gallop rhythm, blood pressure of 175/115, hepatomegaly and pitting ankle edema. Urinalysis revealed a three plus reaction for albumin, granular casts and red blood cells. There was a leukocyte count of about 20,000 and a persistent eosinophilia. The blood urea and nonprotein nitrogen levels were elevated. Biopsy of the pectoralis major muscle was reported normal. Gastroscopic examination revealed an atrophic gastritis.

The patient was treated for hypertensive cardiovascular disease. Penicillin therapy for the leukocytosis and fever caused a severe reaction with the appearance of a skin rash. Numerous stool examinations for pathogens were negative. Gastrointestinal and genito-urinary roentgenography was normal. He was discharged in June of 1947 improved.

He was readmitted to that hospital in August of 1947 due to a recrudesence of the symptoms. Rapid improvement followed essentially the same treatment.

The patient was first admitted to the St. Louis County Hospital in December of 1947. He had noticed the gradual onset of dyspnea and orthopnea in 1945, which subsequently increased in severity. Nine months before entry he developed intermittent ankle edema, a cough productive of gray white sputum, headaches and recurrent episodes of vomiting. Past history was noncontributory.

Physical examination revealed a well developed, well nourished, white man. The temperature was 98.0 F., pulse 102 per minute, respirations 24 per minute, blood pressure 135/100. No retinal hemorrhages or exudes were seen. Moist rales were heard over the lower lobes of both lungs. The heart was moderately enlarged both to the left and to the right. A soft apical, systolic murmur and an aortic, diastolic murmur was present. A gallop rhythm was noted intermittently. The liver was enlarged 6 cm. below the right costal margin and was slightly tender. Marked pitting edema of both ankles was present.

The hemoglobin was 14.5 gm. (93.6 per cent) with 4.58 million red blood cells. The leukocyte count



Fig. 1. A large vegetation in the commissure of the right coronary and noncoronary cusp with a smaller vegetation extending into the sinus of Valsalva of the left coronary cusp.

was 20,000 with a differential count of 61 per cent eosinophils, 21 per cent neutrophils, 17 per cent lymphocytes and 1 per cent monocytes. Repeated urinalysis revealed an ever present but variable amount of albumin, white blood cells and granular casts. Aerobactor aerogenes was cultured from the urine.

Liver function tests showed an icterus index of 8 units; bromsulfalein retention of 36 per cent in 30 minutes and 16 per cent in 45 minutes; cephalin-cholesterol flocculation test was negative; total proteins were 6.93 gm. per 100 cc., albumin 4.34 gm., globulin 2.39 gm.; alkaline phosphate was 3.29 Bodansky units.

Kidney function tests revealed a nonprotein nitrogen level of 44 mg. per 100 cc.; phenolsulfonphthalein excretion of 35 per cent in 2 hours. The sedimentation rate (Westergren) was elevated to 33 mm. The blood Kahn test was negative. The radiograph of the chest showed cardiac enlargement, pulmonary congestion and right pleural effusion. The Rumpel-Leede test was normal.

A biopsy of the left gastrocnemius muscle was reported as exhibiting nonspecific degeneration of the striated muscle. Electrocardiograms indicated a semi-vertical position of the heart with marked clockwise rotation and diffuse, nonspecific, myocardial damage. The patient had no fever and he responded to symptomatic treatment. He was discharged improved later in December of 1947.

During the next nine months the patient was followed in the Out Patient Department. The blood counts demonstrated a marked and persistent eosinophilia (table 1.). During that time he continued to

From the Departments of Medicine and Pathology, St. Louis County Hospital, Clayton.

have symptoms and findings of cardiac decompensation. He also suffered with intermittent vomiting, headaches, insomnia and anorexia. Stiffness and soreness of the right shoulder developed and, on several occasions, petechiae and ecchymoses were noted on the forearms and hands.

Table 1. *Blood Counts*

Date	Red Cell Count	Hb. gm.	White Cell Count	Basophils	Percentage Eosinophils	Stab	Segment	Lymphocytes	Monocytes
12-3-47	4.58	14.5	20,000		61		21	17	1
12-5-47			30,800		61		19	17	3
12-8-47			24,700		58	16	25	1	
12-10-47			26,550		67		21	10	1
12-11-47			19,850		64		21	13	2
12-13-47			39,700		70		8	21	1
12-15-47			25,950		85		10	5	
12-18-47			36,450	1	76	9	12	2	
12-22-47			33,400		86		5	9	
1-5-48	4.51	13.5	22,250	1	42	1	22	34	
1-27-48	4.51	12.5	24,800		45	3	22	30	
2-16-48		13.0	23,000		58		37	15	
3-8-48		12.5	24,650		55	3	28	11	3
3-20-48		14.5			51		36	11	2
3-25-48		13.0	31,250		66	2	16	15	1
4-1-48		14.5	24,250		55		20	24	1
4-12-48		14.0	22,450		36		38	24	2
4-23-48		15.0	28,000	1	51		18	29	1
5-6-48		15.5	21,050		72		17	11	
6-8-48		13.5	18,300		60		16	20	4
9-8-48		13.0	21,900	1	62	1	15	20	1
11-22-48		12.0	13,900	1	39		26	32	2
12-21-48		15.0	19,700		6		85	8	1

Urinalyses during this period showed a constant albuminuria, pyuria and granular casts. Staphylococcus citreus was isolated from the urine on one occasion. Liver function tests continued to be abnormal. The nonprotein nitrogen was elevated at times. Platelet counts, prothrombin, bleeding and clotting times were normal. Two electrocardiograms



Fig. 2. A cross section of the left coronary cusp of the aortic valve showing the granular, fibrinoid material forming a verruca beneath the endocardium.

during that period had changes indicating diffuse, progressive myocardial damage.

The patient was readmitted in September 1948 for reevaluation of his case. On physical examination the previous findings were still present. The heart had decreased slightly in size, the rhythm was regular and no aortic diastolic murmur was heard. The previous laboratory examinations were repeated and the results were similar. Urea clearance was 33 per cent of normal. A Trichinella skin test was negative. The basal metabolic rate was minus 6 per cent. Roentgenograms of the bones were normal except for hypertrophic changes in the dorsal and lumbar vertebrae and right maxillary sinusitis. A biopsy of the right deltoid muscle was reported as normal muscle. Acute inflammation and hemorrhage in the corium with perivascular inflammation was noted in a skin biopsy from an ecchymosis of the right forearm.

The hematologic consultant gave the opinion that the sternal marrow was grossly hypercellular with a marked increase of the eosinophilic elements and moderate stimulation of the erythroid elements. Megakaryocytes were normal (table 2).

The patient remained afebrile. His former treatment was continued and he was discharged slightly improved on September 11, 1948.

Table 2. *Peripheral Blood and Sternal Marrow Counts*

	9-10-48	12-23-48
Peripheral Blood		
Red Blood Cells	4.73 million	4.21 million
Hemoglobin	14.5 Gm.	15.4 Gm
Reticulocytes	1.2%	5.5%
Platelets	586,000	397,000
White Blood Cells	20,950	20,500
Basophils	1.0%	1.0%
Eosinophils	76.0	30.0
Stabs	0.0	1.0
Segmented	8.0	49.0
Lymphocytes	11.0	11.0
Monocytes	4.0	8.0
Anisocytosis	None	1 plus
Poikilocytosis	None	1 plus
Size of RBC's	Normocytic	Normocytic
Sternal Marrow		
Segmented	11.5%	12.5%
Stabs	9.5	5.0
Metamyelocytes	22.5	7.0*
Myelocytes "C"	21.5	4.5*
Myelocytes "B"	1.5	2.5*
Myelocytes "A"	0.5	0.0
Basophils	0.0	0.5
Eosinophils (Mature)	26.0	54.5
Monocytes	0.0	1.5
Reticulum Cells	0.5	0.0
Primitives	6.5	12.0
Plasma Cells	0.5	0.5
RBC's per 100 WBC's	73	26.5
Normoblasts	45.0	17.5
Late Erythroblasts	22.5	7.0
Early Erythroblasts	5.5	2.0

*Eosinophils

Symptoms of cardiac decompensation persisted. His arthralgia grew worse and he complained of intermittent abdominal pain for the next few months.

On the third and final admission, December 20, 1948, severe anorexia, persistent vomiting, abdominal pain and increasing generalized weakness had been present for four days.

The physical findings were essentially the same. There was slight tenderness in the epigastrium and the liver was still enlarged. The blood pressure was 108/70. The nonprotein nitrogen was 105 mg. per 100 cc., creatinine 5.7 mg. per cent, serum chlorides 518 mg. per cent. The bone marrow still showed a preponderance of eosinophilic forms, most of which were mature eosinophils. The erythroid elements were normal and megakaryocytes were present. The marrow was compatible with that seen in leukemoid reactions (table 2).

Shortly after admission the patient went into

shock. The diastolic aortic murmur was again heard. The patient rallied temporarily for several days and then relapsed. He was afebrile. On the seventh hospital day a uremic frost developed, and the patient died.

AUTOPSY REPORT

Gross Anatomic Description:

General—The skin of the face, neck and arms had a brownish, mottled pigmentation, and on the dorsum of the hands and forearms were small ecchymoses.

Heart—The heart weighed 520 grams. The walls of both the left and right ventricles were hypertrophied. Adherent to the endocardium of both ventricles were small vegetations consisting of friable, tan material which ranged in size from 5 to 12 mm. Similar material was present on the tricuspid, mitral and aortic valve leaflets. Masses of this tissue were lodged between the commissures of the aortic cusps and continued over into the sinuses of Valsalva (figs. 1 and 2). In the pockets beneath the anterior leaflets of the mitral valve, attached mainly to the chorda tendiniae, more of this friable, tan material was observed. Cultures from these verrucae yielded no bacterial growth after ten days.

Lungs—The combined weight of the lungs was 1,850 grams. They were voluminous, firm and dusky red. Bronchopneumonia was present in all lobes and there was a recent small infarct in the lower lobe of the right lung.

Gastrointestinal Tracts—Petechiae were observed in the mucosa of the stomach. Segmental areas of the mucosa of the jejunum and ileum were dusky red.

Liver—The liver weighed 1,330 grams. On section the parenchyma bulged slightly and exhibited prominent red and yellow sinusoidal markings interpreted as chronic passive congestion.



Fig. 3. Two arterioles of a portal triad showing the marked thickening of their walls produced by the deposition of abnormal collagen beneath the endothelium.

Spleen—The spleen weighed 210 grams. It was firm and dark red, but otherwise not remarkable.

Adrenals—No significant gross changes were seen.

Kidneys—The right kidney weighed 120 grams; The left kidney weighed 130 grams. The capsules were thin and stripped with ease leaving surfaces which were dark red, firm and slightly granular. Projecting from the surfaces were numerous scattered light gray islets of tissue ranging from 2 to 8 mm. in diameter. The cortices were slightly narrowed. Petechiae were present in the mucosa of the renal pelves.

Lymph Nodes—The mesenteric, periaortic and peripancreatic lymph nodes were slightly enlarged, gray and firm.

Histopathologic Description:

Heart—In the myocardium there were small, scattered, focal areas of fibrosis with hyalinization which had replaced the myocardial fibers. Here and there in the loose adventitia of the mural vessels, sparse scattering of lymphocytes could be seen. The walls of the intrinsic myocardial vessels were not remarkable. Beneath the endocardium of the ventricle there was a deposit consisting of pink, acellular, fibrinoid material. Rare phagocytes and occasional hemosiderin granules were present in the deposit. Above this verruca the endocardium was thick, slightly hyalinized and had some increased vascularity. Protruding through a defect of the endocardium over this vegetation was an additional mass consisting of layers of red blood cells and an admixture of polymorphonuclear leukocytes and fibrin.

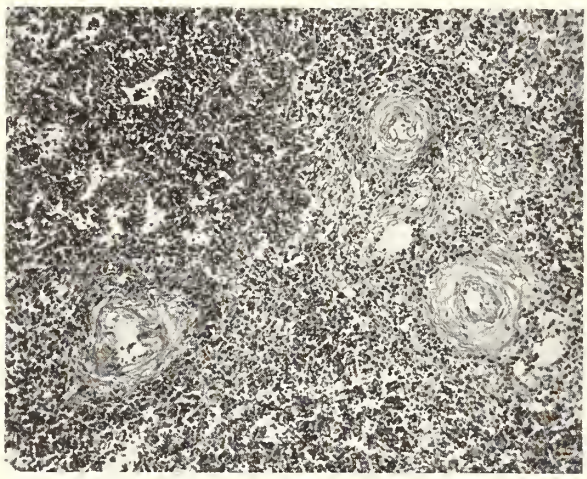


Fig. 4. Several small arterioles of the spleen exhibiting the laminated, concentrically arranged deposits of fibrinoid material, primarily in the adventitia.

Heart Valve—In a section of the mitral valve the leaflet was slightly thickened by a patchy deposition of acidophilic, fibrinoid material. A few thin walled blood vessels were seen, mainly in the core of the leaflet. On one surface the endocardium was lifted and partially encompassed a large verrucous-like mass of pink staining, fibrinoid material which extended for a short distance into the valve substance and submerged laterally beneath the endocardium. No clusters of bacteria or calcium deposits were seen.

Lungs—The principal change was a confluent infiltration of polymorphonuclear leukocytes and fibrin in most of the alveoli throughout the section. An occasional alveolus contained precipitated protein. The intrinsic pulmonary vessels were not unusual.

Gastrointestinal Tract—In multiple sections of the small intestines and colon no significant vascular changes were noted. However, there were numerous scattered focal hemorrhages in the mucosa.

Liver—The principle change of importance was found in the rami of the hepatic artery. The small arteries and arterioles showed marked thickening

of their walls produced by the deposition of abnormal collagen beneath the endothelium. The media of these vessels were distinct and slightly thickened but otherwise not remarkable. The adventitia exhibited some increase in collagenic connective tissue (fig. 3). Intense congestion of the sinusoids could be seen with some pressure atrophy and necrosis of isolated liver cells in the central zones. In the remaining

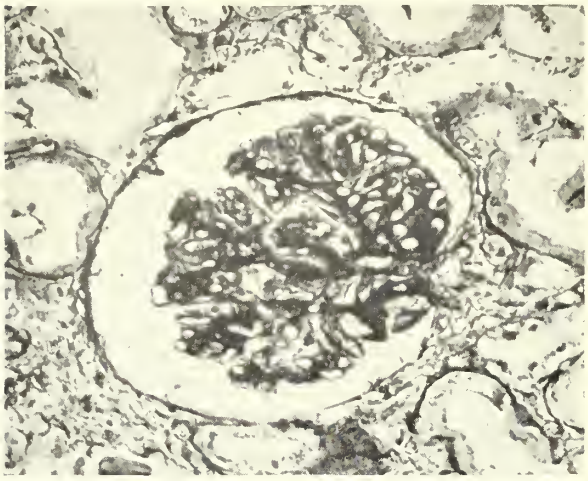


Fig. 5. A glomerulus showing the presence of abnormal collagen material (dark areas) in the capillary loops.

portions of the lobules the hepatic cells were slightly swollen.

Spleen—Several small central arterioles were surrounded by deposits of laminated, concentrically arranged pink material occurring primarily in the adventitia. The lumina were partially obliterated by a subendothelial deposition of similar material. The changes described in and about these vessels were those which have been referred to as "onion peel" changes in blood vessels (fig. 4). There was moderate arteriosclerosis of the larger arteries. There was some depletion of the lymphoid elements, particularly around the Malpighian bodies.

Pancreas—Some of the arterioles between the lobules contained acidophilic material which was deposited beneath the intima, causing a considerable embarrassment of the lumina. Other changes in the pancreas were not significant.

Adrenals—There was some fibrosis in the adipose tissue about the adrenal and a moderate increase of connective tissue in the adventitia of the small arteries in the capsule. No significant changes were noted in the parenchyma.

Kidneys—Several sections of the kidneys revealed similar changes. The most important findings were within the glomerular tufts. In individual capillary loops of the glomeruli could be seen acellular, acidophilic material which was interpreted as being abnormal collagen. This deposit was moderately prominent and caused a thickening of the terminal loops of the glomeruli (fig. 5). Not all capillaries nor all glomeruli were thus involved. There was some ectasia of the proximal convoluted tubules, and colloid casts could be seen in the collecting tubules. Occasional patchy areas were observed in which the tubules were small and atrophic and some of the glomeruli were partially or completely obliterated by hyaline material. In these areas there was a sparse infiltration of lymphocytes and fibrous thickening of Bowman's capsule. The arterioles and medium sized arteries in the sections were unremarkable.

Lymph Nodes.—The principal change consisted of a moderately dense, diffuse infiltration of eosinophils throughout the parenchyma of the node and the adjacent fibro-adipose tissue.

Miscellaneous.—Sections of the skin from the anterior abdominal wall, the omentum and the muscle showed no significant changes.

DISCUSSION AND SUMMARY

Although clinically it was felt that the patient was suffering from one of the collagen diseases, the exact diagnosis was not made until the completion of the pathologic studies. The persistent, marked eosinophilia was the most interesting and puzzling aspect of the case. It is well known that a moderate eosinophilia may occur in association with dermatomyositis and polyarteritis nodosa. Strong reported a case of polyarteritis nodosa in which an eosinophilia as high as 79 per cent of the leukocyte count occurred.

The mechanism of the eosinophilia in these cases is not well understood. In accordance with the allergic theory of etiology of these pathologically related collagen diseases, an eosinophilia might be expected. It is interesting to note that terminally in our patient the eosinophils decreased to 6 per cent of the white blood cell count. This suggests that the eosinophilia was an expression of the patient's immunity or defense mechanism against his disease. The recent experimental and therapeutic studies with adrenocorticotropic hormone and cortisone suggest that a biochemical disturbance of these and related compounds may be an integral part of the basic mechanism of the eosinophilia.

To our knowledge we wish to report for the first time extreme and persistent eosinophilia in a case of Libman-Sacks disease with lupus erythematosus disseminata. We believe that the known causes of eosinophilia have been excluded by thorough clinical and pathologic investigation, and conclude that the etiology of the eosinophilia in this patient must be intimately related to the uncertain cause of this disease.

We wish to express our appreciation to Dr. W. G. Brown and Dr. R. O. Muether for their suggestions in the preparation of this report, and to Dr. C. V. Moore for the hematologic consultations and data.

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ACUTE INTESTINAL OBSTRUCTION IN A 68 YEAR OLD MAN

DUE TO MECKEL'S DIVERTICULUM

J. J. LALLY, M.D.
KANSAS CITY
AND
T. S. BOURKE, M.D.
KANSAS CITY

INTESTINAL OBSTRUCTION may occur at any age but, with respect to certain etiologies, it is considered usual to rather definite age groups.

Thus, while acute obstruction may occur at any age from strangulated hernia, its most frequent cause, according to McIver[1] it is seen usually in childhood and young adults when congenital malformations and anomalies are the causative factor. Of the anomalous group causing such disturbance is Meckel's diverticulum[2] which, when seen in an older age group, is not likely to be diagnosed and may need careful consideration in mode of treatment.

Presented here is a case of acute intestinal obstruction in a 68 year old man, due to a Meckel's diverticulum.

REPORT OF A CASE

On November 3, 1951, a 68 year old white male was admitted to St. Mary's Hospital with a story of crampy abdominal pain and vomiting for four days. He had had no bowel movement in that time.

His past history was that of an active man of 68 years who had never been operated upon, had had no serious illness nor been a hospital patient previously.

He ate well and was free from all gastrointestinal discomforts and had not missed a normal bowel movement daily in the last twenty years. His sole abdominal pain was experienced in an episode of "locked bowels" at the age of 15 years. This had been relieved promptly by a single enema.

He had lost fifteen pounds in the last year.

Examination revealed an alert 68 year old male with normal temperature and pulse; blood pressure of 134/80; abdomen much distended. Percussion of the abdomen produced a hollow sound and a high pitched borborygmus could be heard through the stethoscope.

No rebound tenderness was present and no masses were palpable through the distention. There were no abdominal scars and examination in both the standing and bending positions was negative for inguinal or femoral hernia.

The leukocyte count on admission was 7,200 and a scout film of the abdomen showed many loops of distended bowel throughout the abdomen. A rectal examination was normal and two easily instilled enemas returned clear. Any suspicion of obstructive colon lesion was dispelled with a barium enema which outlined a normal colon and cecum.

A diagnosis was made of a simple low obstruction of the small bowel—simple because of the normal leukocyte count and absence of any signs of peritoneal irritation and low obstruction of the small bowel because of the many distended loops of bowel in the scout film and because of the normal large bowel as ascertained by the barium enema.

Wangensteen suction with a Miller Abbott tube was started along with intravenous glucose, saline solution and amino acids to maintain fluid balance.

Within forty-eight hours of the start of this conservative therapy the distention was noticeably less and the crampy pain had lessened; however, in another twelve hours the leukocyte count had risen to 10,000, the temperature to 100.6 F. and the pulse to 92. Surgical intervention was decided upon.

Through a right rectus incision the abdomen was opened and approximately 400 cc. of clear fluid was withdrawn. The cause of obstruction was readily seen as a 3 inch heavy fibrous cord extending from the tip of a Meckel's diverticulum to the base of the mesentery. The anomaly was located about 30 cm. from the cecum and measured 2½ inches by 1¼ cm.

Beneath this fibrous cord, a single loop of the terminal 30 cm. of ileum was tightly constricted against the mesentery.

Division of the cord resulted in immediate passage of bowel contents past the point of obstruction; the bowel itself appearing intact despite its former tight constriction.

The Meckel's diverticulum was clamped and resected; the stump being sutured in a double line closure perpendicular to the long axis of the bowel.

The abdomen was normal to further exploration and was closed in layers using retention sutures. Within two hours after operation a voluminous bowel passage occurred and after three postoperative days the Miller Abbott tube was removed.

The patient made an uneventful recovery and was discharged on the eleventh postoperative day.

COMMENT

According to Bell,[3] Meckel's diverticulum is seen in from 1 to 2 per cent of autopsies and causes obstruction most frequently when its tip is united to the base of the mesentery by a fibrous cord, beneath which a loop of bowel is constricted (Cole[2]).

In this case the obstruction of the terminal ileum was complete, yet not enough to cause a destruction of the bowel so as to necessitate a resection.

1207 Rialto Bldg.

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PRESIDENT'S PAGE

In the 1948 presidential election only half the American people of voting age voted—48,000,000 out of a possible 95,000,000. The percentage of people who vote regularly in all elections, local, state and national, is normally only from 20 to 25 per cent.



It has been said that the medical profession, as a whole, is one of those groups which percentagewise is in the lowest category among those voting. Why is this the case? The physician who fails to register and vote is not in any position to complain about high taxes, corruption in government or trends in government which he personally does not like.

In order to vote in Missouri it is necessary to register. Registration is required of those who are not now on the permanent registration lists. If one has changed his residence since the last election or has not voted during the last four years, it is necessary to register again. Many cities in the state are now conducting special registration campaigns so that one may register at the normal voting place for the district. One may register at the Board of Election Commissioners of the county also.

Be sure to register and then to vote in the August 8 primary for the candidates of your choice. See that other members of your family are registered and then vote.

J. William Thompson M.D.

Editorials

E. CLAUDE BOHRER, M.D. PRESIDENT-ELECT

E. Claude Bohrer, M.D., West Plains, was elected President-Elect of the Missouri State Medical Association at the 94th Annual Session held in St. Louis, March 30 through April 2, 1952. He will serve as President-Elect until the next Annual Session when he will be installed as President.

Dr. Bohrer began practice in West Plains in 1923 and has been active in medical organization work since that time and brings to his office a great deal of experience and ability.

Born in Olden, Howell County, Missouri, on August 17, 1892, Dr. Bohrer moved with his family to West Plains in 1895 and attended grade and high school there, graduating from the West Plains High School in 1910. He attended the University of Kansas City College of Pharmacy from 1911 to 1913, receiving his degree in pharmacy and his Missouri State registration as a pharmacist. He was a pharmacist in his father's drug store in West Plains until 1916.



E. Claude Bohrer, M.D., President-Elect

In 1916 Dr. Bohrer went to the University of Missouri and in 1920 received his A.B. degree and two year medical certificate. He went to Washing University School of Medicine immediately following and received his M.D. degree in 1922. After serving an internship at St. Louis City Hospital, he entered the general practice of medicine in West Plains and has practiced there continuously since that time.

Dr. Bohrer has served the South Central Counties Medical Society in various capacities including the presidency. He was elected to the Council of the Missouri State Medical Association in 1938 and served as Councilor from the Ninth Councilor District until the time of his election as President-Elect. He served as Vice Chairman of the Council from 1948.

Dr. Bohrer is a member of the American Academy of General Practice, the American Trudeau Society and American College of Chest Physicians. He is a member of Phi Beta Kappa, Sigma Xi and Alpha Omega Alpha. His hobbies are color photography and music.

Dr. Bohrer was married to Thelma Evans of West Plains in June, 1924. They have two children, Joan Bohrer, who has her A.B. degree from Washington University, and Paul Bohrer, who is a student at Drury College, Springfield.

The House of Delegates has chosen well its President-Elect for 1952 and President for 1953.

A GOOD DOCTOR IS A GOOD CITIZEN

The physician who consistently fails to attend hospital staff meetings, or who takes no active part in the affairs of his medical society, is hardly in a good position to criticize either the hospital or the medical society. By failing to make his voice heard, he must share the blame for any faults, failures or deficiencies.

Likewise, the physician who fails to register and vote is not in a good position to complain about corruption, taxes or governmental policies which he finds obnoxious. By failing to fulfill one of the vital duties of citizenship, he must share the blame for any black spots in the affairs of the community, the state or the nation.

The right to register and vote, which is both a privilege and a duty in a nation of free men, was never more important than it is right now. Fundamental issues which transcend the usual party politics, and which will affect the future of every American, call for a clear cut decision by the entire voting population. Each physician should play his rightful part in that historic American decision.

To be a good doctor—first be a good citizen. Register and then vote. And of equal importance, see that your family does likewise.

Organization and Economics

NEWS

Oscar V. Batson, M.D., Chairman of the Department of Anatomy, The Graduate School of Medicine, University of Pennsylvania, Philadelphia, will give an illustrated lecture dealing with his work on the venous systems on June 3 under the auspices of the faculty of the School of Medicine of the University of Missouri. The lecture will be given at 8:00 p. m. in the General Library Auditorium of the University at Columbia. The title of the presentation will be "The Vertebral Veins and Other Valveless Veins." All members are invited to attend.

The federal Civil Defense Administration is authorized to employ a full time Medical Director to handle medical civil defense problems arising within each of the nine civil defense regions of the United States. Qualified physicians may contact the office of the Association for information and the official job description which pays $10,800 per year.

MUSINGS OF THE FIELD SECRETARY

At the April meeting of the Ozarks Medical Society, the lawyers of the five counties comprising the Society were invited guests. A fellowship hour initiated the evening festivities. A bountiful dinner gave further aid to the production of a most pleasant atmosphere. On the program proper the eloquence of vocal expression (one of the important weapons of the legal profession's arsenal) was well demonstrated. Various points of mutual interest to the legal and medical professions were discussed by representatives of the lawyers present and W. S. Sewell, M.D., Springfield, Councilor of the Eighth Councilor District, was called upon by the Society to discuss mutual problems of the professions from the viewpoint of the doctors. The many areas of common interest between doctors and lawyers may be reviewed profitably through means of meetings of this type.

The Fourth annual meeting of the Missouri Academy of General Practice was held at the Governor Hotel, Jefferson City, on May 8. Some hundred and twenty-five general practitioners from all sections of the state attended. The morning program dealt with the business end of the Academy's activities. The scientific program began with a luncheon session featuring Carl Moyer, M.D., St. Louis. On the afternoon program the following doctors appeared: Drs. William B. See, Columbia; Garold V. Stryker, St. Louis; Stanley F. Hampton, St. Louis, and William P. Williamson, Kansas City, Kansas. Mr. H. Roe Bartle, Kansas City, gave the address at the annual banquet stressing the importance of the role of the physician in community affairs.

NEW MEMBERS

Calodney, Martin M., M.D., St. Louis.
Collins, John M., M.D., Webster Groves.
Coulter, Robert L., Jr., M.D., Clayton.
Creekmore, Maurice A., M.D., Jefferson Barracks.
Elam, James O., M.D., St. Louis.
Feldaker, Mauri, M.D., St. Louis.
Fijan, Kenneth J., M.D., St. Louis.
Gallagher, Donald M., M.D., Webster Groves.
Handler, Fred P., M.D., San Francisco, Calif.
Hughes, Robert G., M.D., Creve Coeur.
Jacobs, Frederick A., M.D., St. Louis.
Johnson, Edward M., M.D., Macon.
Kahn, Lawrence, M.D., St. Louis.
Koerner, Kenneth A., M.D., Clayton.
Korn, Robert L., M.D., St. Louis.
Lawrence, George H., M.D., St. Louis.
Littauer, David, M.D., St. Louis.
McClure, David N., M.D., St. Louis.
McGowan, Hugh D., M.D., St. Louis.
McLelland, Richard I., M.D., St. Louis.
Miles, Paul W., M.D., St. Louis.
Orrahood, M. David, M.D., St. Louis.
Popovich, Paul J., M.D., St. Louis.
Reulbach, Franklin P., M.D., Jefferson Barracks.
Riggio, Salvatore N., M.D., St. Louis.
Ritchey, Mary G., M.D., St. Louis.
Roberts, John P., M.D., Kirkwood.
Roblee, Melvin A., M.D., Clayton.
Ross, Charles M., M.D., St. Louis.
Ross, Herman C., M.D., Brentwood.
Scobee, Richard G., M.D., St. Louis.
Sinkler, William H., M.D., St. Louis.
Staples, Daniel E., M.D., St. Louis.
Summers, John B., M.D., St. Louis.
Toney, Lee Egbert, M.D., West Plains.

DEATHS

Evans, Emery E., M.D., St. Louis, a graduate of Beaumont Hospital Medical School, St. Louis, 1901; honor member of the St. Louis Medical Society; aged 75; died February 28.

Hawkinson, William O., M.D., Roanoke, a graduate of the Missouri Medical College, St. Louis, 1884; honor member of the Chariton - Macon - Monroe - Randolph County Medical Society; aged 89; died March 2.

Coombs, Miller O., M.D., Joplin, a graduate of the Hahnemann Medical College and Hospital, Chicago, 1912; member of the Jasper County Medical Society; aged 72; died March 5.

Kearby, Howard D., M.D., St. Joseph, a graduate of St. Louis University School of Medicine, 1918; member and past president of the Buchanan County Medical Society; aged 65; died March 13.

Craven, Y. D., M.D., Long Beach, California, a graduate of Kentucky School of Medicine, Louisville, 1896; honor member and past president of the Clay County Medical Society; aged 83; died March 18.

Luedde, William H., M.D., St. Louis, a graduate of

Washington University School of Medicine, 1900; honor member of the St. Louis Medical Society; aged 76; died March 19.

Starks, John C., M.D., Gower, a graduate of the Missouri Medical College, St. Louis, 1897; honor member of the Clinton County Medical Society; aged 78; died March 21.

Clark, Charles F., M.D., Lynwood, Calif., a graduate of the University of Michigan School of Medicine, 1881; honor member of the Jackson County Medical Society; aged 96; died March 22.

Jacobs, Gustave E., M.D., St. Louis, a graduate of the St. Louis College of Physicians and Surgeons, 1915; member of the St. Louis County Medical Society; aged 68; died April 5.

Hamilton, Buford G., M.D., Richmond and Jefferson City, a graduate of Washington University School of Medicine, 1905; honor member of the Jackson County Medical Society; Commissioner of Health of the State of Missouri at the time of his death; aged 71; died April 17.

ROCKY MOUNTAIN CANCER CONFERENCE

The sixth annual Rocky Mountain Cancer Conference will be held in Denver on July 9 and 10. The conference is sponsored by the Colorado Division of the American Cancer Society and the Colorado State Medical Society.

Guest speakers of the conference will be Drs. Lauren V. Ackerman, St. Louis; Lyon H. Appleby, Vancouver, B. C.; Simeon T. Cantril, Seattle, Wash.; Edward P. Crawley, Charlottesville, Va.; Harold W. Dargeon, New York; George R. Meneely, Nashville, Tenn.; Langdon Parsons, Boston; Cornelius P. Rhoads, New York.

A nonscientific banquet with special entertainment will be held on the evening of July 9.

The full program and further information concerning the conference may be obtained from the Rocky Mountain Cancer Conference, 835 Republic Building, Denver 2, Colorado.

DIVISION OF HEALTH RULINGS ON VENEREAL DISEASE CONTROL

Treatment of the venereal diseases is an important element in their control because treatment quickly reduces infectivity, thus impeding further spread. It is for this reason, plus the considerable cost of older treatment methods, that health departments have for several years maintained diagnostic and treatment clinics for medically indigent venereal disease patients. Contact investigations and patient education are also essential to successful venereal disease control.

Practicing physicians have been encouraged to participate in the venereal diseases eradication program. Laboratory diagnostic services, free drugs and follow-up services have been available to them in Missouri for many years. Because of the prevailing feeling toward the venereal diseases, however, a close and effective working relationship between the practicing physician and the health department has seldom been attained.

With the advent of intensive arsene-therapy for early syphilis it became possible to treat infectious cases of syphilis more quickly, increase the number of patients who completed treatment and thus reduce the follow-up of patients who lapsed from treatment. Intensive or rapid treatment required hospitalization and rapid treatment centers were established to meet this need. In Missouri the first such center was opened at Monett in 1942. The year following, the Midwestern Medical Center was established at the old Marine Hospital in St. Louis and the Monett Center was closed.

The introduction and availability of penicillin for the treatment of syphilis about 1945 made it possible to give rapid therapy to all types of syphilis. Hospitalization was still necessary because penicillin had to be given several times daily, around the clock, for several days. Rapid treatment centers were then considered an essential part of a good venereal disease control program.

A few years following this era, prolonged action penicillin appeared in the form of penicillin in oil with beeswax (P.O.B.) and later in its present form, procaine penicillin in oil and 2 per cent aluminum monostearate. It soon became apparent that treatment every two or three hours was not necessary with the new form of penicillin and that patients could be successfully treated on an ambulatory basis.

The Midwestern Medical Center has played a vital and effective role in Missouri's venereal disease control program. It has served as a focal point for expert diagnostic and treatment services and as a training center for physicians, nurses and others. It has been the chief source of contact information and has been active in patient education. In addition to these routine functions, the Center has actively participated in nation wide evaluations of treatment schedules. During the last year, however, its patient day census has fallen to a point where the cost per patient is relatively high. The high cost of in-patient care and the fact that ambulatory treatment is now satisfactory make it necessary to anticipate closure of the Center.

Since most public clinics and many physicians have for several years referred their syphilis patients to the Midwestern Medical Center, the art of diagnosis, treatment, contact interviewing and patient education has declined in the local community. There must be a strengthening of these activities on the part of both health departments and practicing physicians if effective control is to be carried on at the local level. Although treatment has been simplified, syphilis still requires, in general, three injections a week, and this schedule puts a burden on small under-staffed health departments. The apparent marked decline in syphilis in Missouri (11,500 reported in 1946

vs. 5,700 in 1951) brings up the question of economy of clinic operation. A clinic with low attendance could be extremely expensive on a per patient basis.

With these considerations in mind, the Venereal Disease Control Committee, in collaboration with representatives of the Missouri Division of Health, has devised a venereal disease control program deemed to be practical, economical, effective and to the best interests of the public, physicians and health departments. The essential elements in the plan are as follows:

1. The plan envisions the closure of the Midwestern Medical Center, probably about June 30, 1952.

2. Practicing physicians will be paid a modest fee for the treatment of venereal disease patients who, in the judgment of the physician, are unable to pay for treatment. Penicillin will also be supplied to physicians.

3. All patients for whom payment is to be made are to be interviewed by a representative (public health nurse or venereal disease investigator) of the local health department for purposes of epidemiologic investigations.

4. The plan will not be in effect in communities where, because of adequate facilities and a relatively high venereal disease prevalence, clinic services are maintained.

This program will be administered by the Missouri Division of Health through local health departments, district offices and county nursing services. Physicians who have occasion to participate in this plan may secure further details from local public health representatives or from the Division of Health.

Much progress has been made in venereal disease control in recent years but much remains to be accomplished. A continued alertness to, and interest in, the venereal diseases by practicing physicians will further improve the picture. Physicians represent the first line of defense.

WOMAN'S AUXILIARY DELEGATES TO NATIONAL CONVENTION

The following will represent the Woman's Auxiliary to the Missouri State Medical Association at the meeting of the Auxiliary of the American Medical Association in Chicago in June: Mesdames C. T. Shepherd, St. Louis; Norton Eversoll, St. Louis; W. E. Martin, Odessa; John O'Connell, Overland; Alex McBurney, Slater; W. L. Allee, Eldon; W. C. Cheek, Springfield; Armand Fries, St. Louis; Harry Gilkey, Kansas City; Howard Wilcox, Boonville; Paul Cole, Springfield; Walter Kirchner, St. Louis; P. R. Whitener, Overland; R. J. Crider, St. Charles; A. B. McGlothlan, St. Joseph; F. H. Maples, Mount Vernon.

COUNCILOR DISTRICT NEWS

THIRD COUNCILOR DISTRICT

R. O. MUETHER, ST. LOUIS, COUNCILOR

Robert D. Woolsey, M.D., St. Louis, delivered a report on "A Review of Three Hundred Cases of Protruded Intervertebral Disks Treated Surgically" at the International College of Surgeons in Madrid, Spain, on May 22.

G. O. Broun, M.D., St. Louis, has been asked permission by the American Foundation for the Blind to record his book "Medical Essentials for Students of the Professions Allied to Medicine" for the use of the blind.

FOURTH COUNCILOR DISTRICT

JOHN O'CONNELL, OVERLAND, COUNCILOR

St. Louis County Medical Society

The St. Louis County Medical Society held its regular meeting on April 9 at the Health Center, St. Louis County Hospital, Clayton, with forty-three present.

An announcement was made asking the members of the Society to cooperate with the Missouri Medical Service in returning forms promptly so that proper payment can be made more promptly.

It was voted that the Society should accept the invitation to participate in the work of the Health Council of Metropolitan St. Louis.

Wendell G. Scott, M.D., St. Louis, spoke on "X-ray Visualization of the Heart and Great Vessels by Contrast Media."

M. A. Diehr, M.D., Secretary.

NINTH COUNCILOR DISTRICT

J. H. SUMMERS, LEBANON, COUNCILOR

An evening dinner meeting of the Ninth Councilor District was held at Rolla on April 24. The activities began at 4:30 p. m. with a social hour at the Edwin

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* Lane, C. G., "Therapeutic Dermatitis", New Eng. J. Med., 246:77-81, 1952
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*Nutrients for which daily dietary allowances are recommended by the National Research Council.

Long Hotel. Dinner was served at 6:00 p. m. followed by the program.

J. W. Thompson, M.D., St. Louis, President, Missouri State Medical Association, discussed "Our Relationships with Blue Cross and Blue Shield."

Following Dr. Thompson's address the group moved to the Chemistry Building on the campus of the State School of Mines. A unique demonstration of "Fires and Explosion Hazards in Hospitals" was ably presented by representatives of the United States Bureau of Mines under the direction of Mr. R. G. Knickerbocker, Chief of the Bureau of Mines at Rolla.

J. H. Summers, M.D., Councilor.

South Central Counties Medical Society

The South Central Counties Medical Society met for dinner at the Horton Hotel, Willow Springs, on April 16 with the following members and visitors present: Drs. S. W. Connor, R. W. Denney and A. C. Ames, Mountain Grove; T. J. Burns and S. G. Kramer, Houston; M. B. Perkins, Willow Springs; T. R. Skaggs, Mountain View; E. C. Bohrer and Rollin H. Smith, West Plains; C. W. Cooper, Thayer; A. R. Walker, Mammoth Springs, Arkansas; Charles E. Lockhart and Wilfred E. Wooldridge, Springfield, and the wives of most of the doctors.

After dinner the ladies went home with Mrs. Perkins for the evening and Dr. Connor, the president, called the meeting to order.

Dr. Lockhart showed some pictures of tumors of the face and the results of operations for their removal. Dr. Wooldridge showed pictures of syphilitic lesions in the various stages of the disease. A vote of thanks was given the speakers.

L. E. Toney, M.D., West Plains, was made a new member of the Society.

E. Claude Bohrer, M.D., West Plains, was congratulated by the Society on being elected President-Elect of the Association.

It was voted that the by-laws of the Society be changed and that the vice president be the president-elect of the society.

It was voted to hold the next meeting at Mountain View on May 28.

A. C. Ames, Secretary.

TENTH COUNCILOR DISTRICT

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An informal reception was held at the Perry County Memorial Hospital, Perryville, on April 20 to celebrate the completion of its first year of operation. During its first year records show two hundred major operations performed, two hundred fifty minor operations, one hundred seventy accident cases treated and four hundred babies delivered in addition to performing a large number of clinical laboratory and x-ray examinations.

Fifty physicians attended an evening dinner meeting of the Tenth Councilor District at the Hickory House, Poplar Bluff, on April 30. A social hour beginning at 6:30 p. m. opened the evening's festivities which was followed by a steak dinner.

J. W. Thompson, M.D., St. Louis, President, Missouri State Medical Association, spoke on "Our Relationships with Blue Cross and Blue Shield."

"Recent Advances in the Management of Various Heart Diseases" was discussed by a panel from the Cardiovascular Section of St. Louis University School of Medicine composed of Drs. E. Lee Shrader, James G. Janney, Chester Lynxweiler and J. Gerald Mudd.

Frank W. Hall, M.D., Councilor.

CORRESPONDENCE

JOHN ZAHORSKY, M.D.
Steelville

Emeritus Professor of Pediatrics,
St. Louis University School of Medicine

To the Editor:

Pneumonia

Although the death rate of pneumonia has been mentioned several times, and its value as a measure of medical efficiency may be justly condemned, I can not omit some of the curious variations exhibited by different urban and rural districts. Let me first notice the extremes for the year 1948. However, it seems wise to note that the clinical diagnoses in many of these cases are variable. Thus some counties never have a death from bronchitis or influenza. Others seem to classify every acute respiratory infection without manifest pulmonary consolidation as influenza. Bronchopneumonia also is used, no doubt, to specify certain forms of asthma and heart disease. It seems best to add together deaths from lobar pneumonia, bronchopneumonia, unspecified pneumonia and influenza. (Death rate per 100,000).

First: The urban and rural figures:

Recorded death rate: urban 52, resident 46.

Recorded death rate: rural 66, resident 64.

The deaths from acute respiratory diseases are higher in the country than in the city. Is not this a strong argument for the inefficiency of rural medicine?

Let us look at some of the counties: First the extremes, high rate, Iron County 216 (surely this must be a mistake) all treated by regular M.D.'s, a good hospital too. The resident rate was also high, 174. The death rate from respiratory diseases in 1946 was about the same, 215. What is defective in the resistance of the people in Iron County and the neighboring district?

Butler County with the City of Poplar Bluff also experienced a high death rate: Recorded 128, resident 107. (State average 52). Now compare these figures with those of Cape Girardeau: Recorded 24, resident 24. What is there about the Cape that is so salubrious?

Then there is Howell County, served equally by M.D.'s and D.O.'s (small individual hospital), population 21,000, which also has a low respiratory death rate: recorded 42, resident 43, which shows that even a country district can be relatively free from pneumonia. Reynolds County near by had a death rate of more than 150 from respiratory infections among its residents.

Even Cedar County, which I had placed as an out-

This is the third of a series of letters to the Editor from Dr. Zahorsky. Others will be carried in future issues of The Journal.

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standing example of good obstetrics had a death rate of 120.

I studied the northern counties. I will mention only a few: Barton County with plenty of physicians and a county hospital, pneumonia death rate 105; Carroll County with three individual hospitals, 93; Callaway County, 90; Ray County, 110; and Washington County, 93. My home county, Crawford County, 120.

Now a few prizes may be bestowed. The first prize goes to Stone County, an Ozark County with a fair number of M.D.'s. The pneumonia death rate was 19. Or should Shannon County be first, not a single death report from pneumonia or influenza. The suburbs of a large city are eminently healthy, as St. Louis County, 19; Lafayette County, 22; Miller County, 22; Cole County, 25; and Phelps County, 22. A pneumonia death rate of 22 per hundred thousand is possible. Knox County reported no deaths from pneumonia but three deaths from influenza (rate 39).

Indeed, at first I received the impression that the osteopaths chiefly were reporting the deaths from influenza. I tabulated a number of counties in which the osteopaths are the principal practitioners. In Stoddard County where these practitioners have made such a success as obstetricians no influenza deaths were reported. This is different from Crawford County, also in Knox County. On the other hand, in Iron County where there are no osteopaths, influenza is given as the cause of death in 6 cases thereby raising the rate to 62 and adding up to that maximum pneumonia rate.

The question whether a suspected case of pneumonia should be immediately hospitalized remains unsettled. The statistics show that such a disease may be treated at home successfully if the doctor is not overworked with obstetrics and gives his patient the same attention that is demanded in a good hospital. Note the low respiratory death rate in Texas County and Howell County and Dent County in the Ozarks. The hospital deaths are greater simply because the patients do not arrive early enough. Should not the people, nowadays, resist the pressure to remove the patient to the hospital at a distance, when the sick one lives in a good home and has relatives and friends and a young well trained M.D. is in attendance?

It is gratifying to note the continued improvement in the death rate from pulmonary tuberculosis. In 1946 the state death rate was 32, about 34 urban and 24 rural. In 1948, the figures stood: state 25, urban 29, rural 18. Let me present the figures from the two standards, the southern group of ten counties and the northern group of ten counties. In the northern group in 1946 the death rate was 25; in 1948 it was 15. In the southern group of counties the death rate in 1946 averaged 28 and in 1948 had dropped to 18 per hundred thousand inhabitants. Congratulations to the country practitioners!

Hospitals

Modern medicine is taught chiefly in the hospitals. No wonder that the young doctor in selecting his place of practice first inquires as to the location of a good hospital although practitioners know that 90 per cent of medical service is rendered in the doctor's office or in the home. Let me state at once that I have no prejudices against the hospitals. A well equipped hospital is one of the greatest achievements in medical history. One should remember, however, that the greatness of any hospital depends chiefly on the skill and wisdom of the nurses and physicians.

In rural practice, where simplicity and economy is always considered first, the least possible expense with adequate care, the hospital presents a formidable dilemma to the practitioner.

Every district not containing a hospital is shunned by the young physician but as his experience grows he gradually uses the expensive service of the hospital less and less. Has not the benefaction of the hospital been overrated? The Blue Shield and Blue Cross have served to interest most families in hospital service. The patient goes to a hospital and the superintendent selects the doctor. Are not all hospitals becoming overcrowded with patients who could safely be nursed at home?

Everywhere the movement to erect more and larger hospitals is becoming a social rage. Every community must have a hospital! It is the style now to be treated in a hospital. Some patients are so narrow sighted that they can not see their doctor for the glamor of the hospital surroundings. The confiding trust is so often shifted from the doctor to the hospital. Except in an extreme emergency, the patient should not be sent to an expert physician; he should get acquainted with his new doctor; his welfare really depends largely on the doctor, not on the hospital.

Does Missouri need more hospitals? Nearly all of the cities in counties having more than 30,000 inhabitants have hospitals now. (I leave out the metropolitan hospitals for the present). So many of the counties having between 20,000 and 30,000 population have hospitals. Altogether the rural area, two million inhabitants, have about fifty hospitals and I exclude hospitals for the insane and incurable cripples. Many are small private hospitals. Osteopaths also have built about forty hospitals.

One hospital to every 30,000 inhabitants seems sufficient. This means that two or three counties in the rural region may combine their efforts.

Will a small hospital in every county be of greater service? The answer is decidedly no. A small hospital cannot afford to keep a resident physician, a superintendent, nurses, pathologist, technician, radiologist and other employes. Every hospital must conform to the rigid requirements in staff and equipment formulated by the American Association of Hospitals, for the holder of a Blue Cross card can be treated only in such a hospital. What good is a hospital that is not properly staffed with competent specialists—surgeons, urologists, internists, obstetricians, pediatricians and trained nurses?

Nevertheless, about two hospitals in the central Ozark region would entice more young doctors to locate there. Crawford County is fortunate since a new modern hospital has been erected at Rolla, only thirty miles from Steelville and twenty miles from Cuba. Surely this ought to be an attractive location for the recent graduates in medicine.

Where will the interns for these hospitals be obtained? What is a hospital without interns! Has not the needful clerkship for hospitals been overdone? Let me quote, or rather paraphrase, from an article by Dr. W. L. Hart, Dean of the University of Texas Medical School: "Most medical schools are linked with hospitals and not the public. Why internship? Can not the necessary medical knowledge be given in a four years course? Let the graduate get into practice as assistant to a practitioner, especially the



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country, for one year. Hospitals depend on interns for virtually free labor."

The approved hospitals of the United States want more interns; in fact, there was a great shortage of interns in 1950. According to the *Journal of the American Medical Association*, (Vol. 145, page 1339) more than 9,000 internships were offered to medical students with only about 5,000 available.

As is well known, the young physician, recently discharged from a wide hospital experience, attempts to carry out the technic learned in the hospital. It takes two or three years of work in private practice to learn that roentgen and laboratory examinations are necessary only in a small number of cases. As his experience grows these refinements of diagnostic procedures steadily shrink in practice, yet it is disastrous to ignore them completely.

The cost of service in a hospital is steadily going up, $200.00 or more for an obstetric case; $12.00 a day even in a ward! Is this merely an expression of our period of inflation?

Every approved hospital is expected to be a research center, and this is mainly why the expense continually increases, for research is constantly incorporating new technical procedures. Only the intern is still moderate in his stipends. The medical journals are replete with the history of cases, nearly all of them compiled by interns. Research hospitals are positively necessary in connection with the universities but why grade a hospital on its facilities for medical research? Should not a hospital be graded principally on its service to the public?

It is claimed that the hospital becomes the "Health Center." Again an institution and not the individual is presented to the public. Should not every practicing physician, a general practitioner, be a health center? Should he not have an affection for his patients and know all the members of the family?

The general practitioner who has practiced twenty years or more and has faithfully served several hundred families in the prevention and cure of disease is suddenly faced with another competitor—the "Health Center." It is becoming stylish. The center can advertise and display its painted walls and decorated halls, but the doctor is omitted.

It is true that a hospital does relieve the physician from work and worry. Does the newly graduated physician want ease and comfort in the practice of medicine? He relieves his apprehensions by throwing some of his mental load into the wards of the hospital. The people are pleased with the hospital service, they want it, it is stylish and up-to-date, so be it!

The latest venture is the private hospital. Every general practitioner in the rural area is urged to build a private hospital, even a few rooms attached to his office is called a hospital. The City of Carrollton, population 4,370, has three individual hospitals, twelve to sixteen rooms each. Individual hospitals also are utilized by the younger physicians in California, Malden, Neosho, Ozark, Salem, Sweet Springs, Trenton and West Plains. Poplar Bluff now has four individual and partnership hospitals. Soon no physician will be popular or up-to-date who has not two or more hospital rooms connected with his office. A great help to the doctor, but does it save lives? Only the future can tell. Can the rural population stand the expense? More on the rural hospital later.

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*Gordon, Harry H.: Feeding of Premature Infants, American Journal of Diseases of Children 73:713 (June) 1947.

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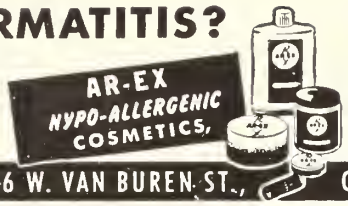
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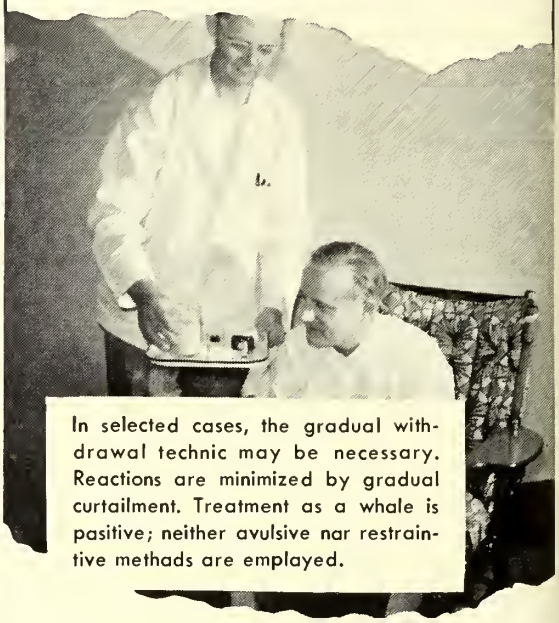
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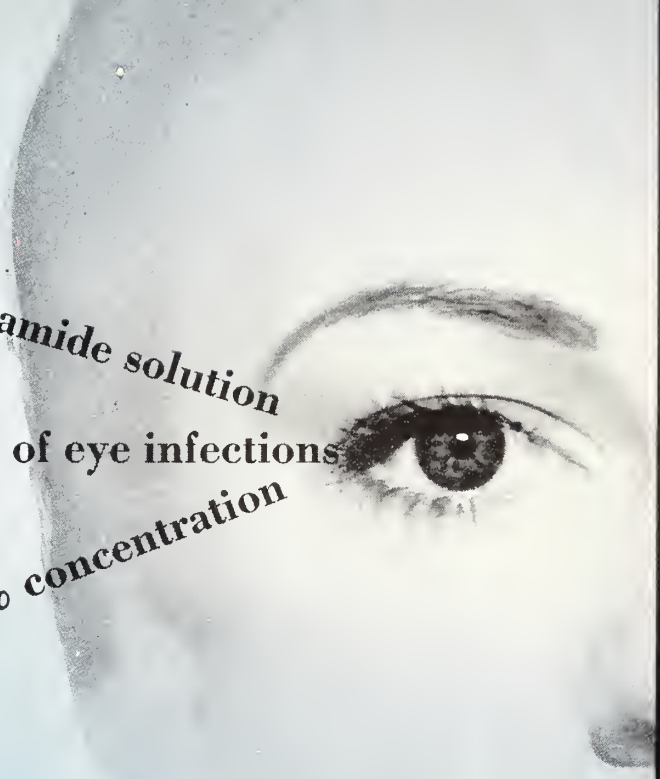
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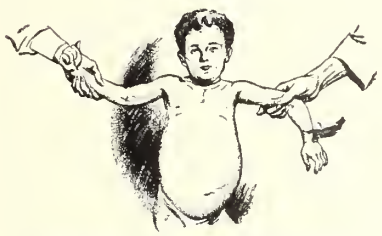
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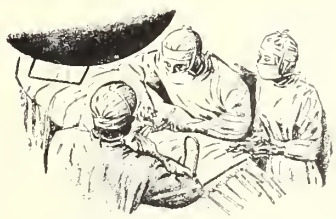
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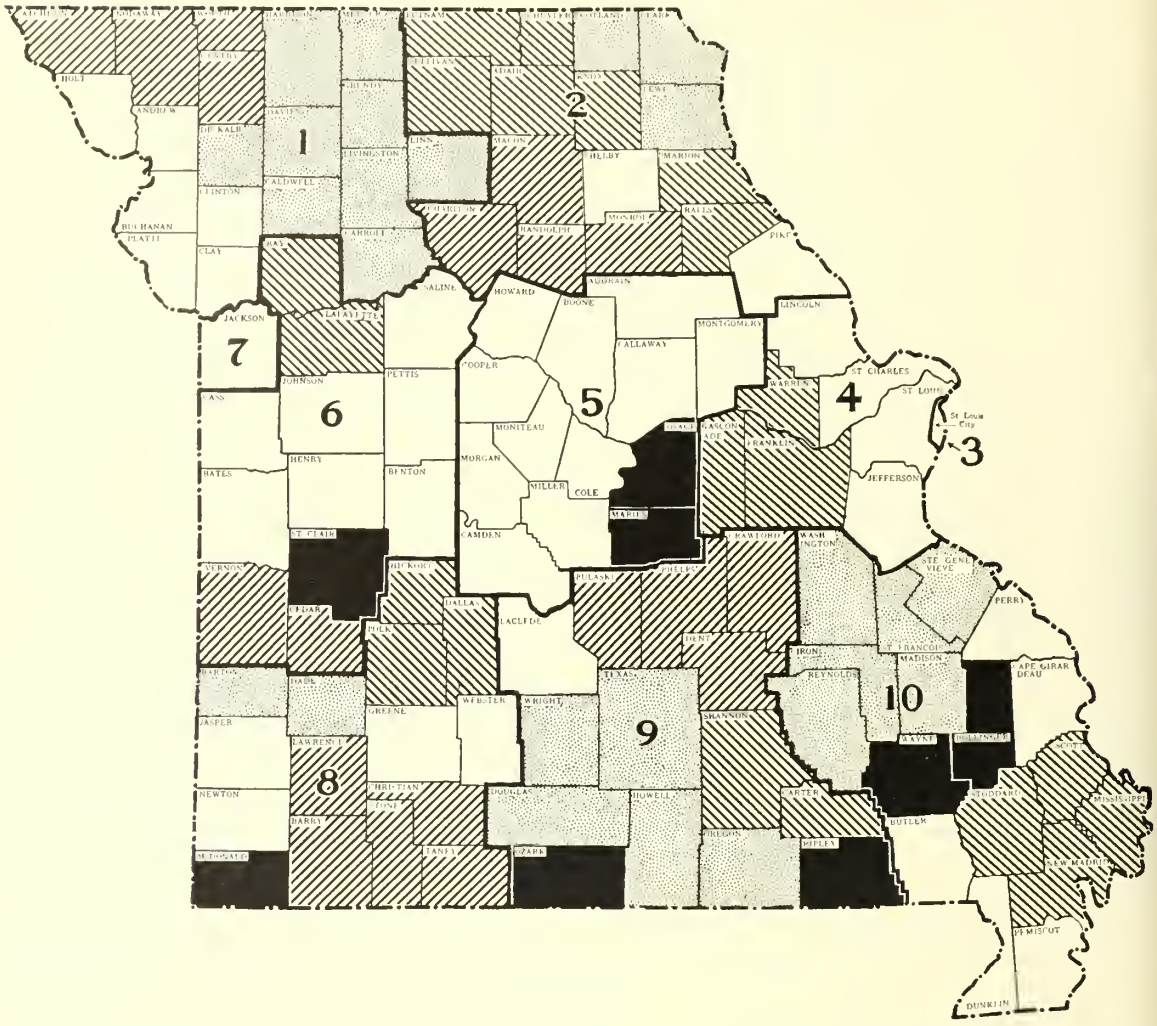
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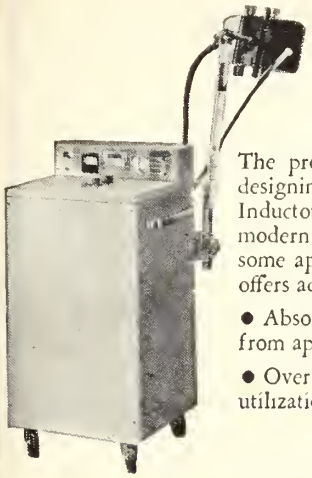
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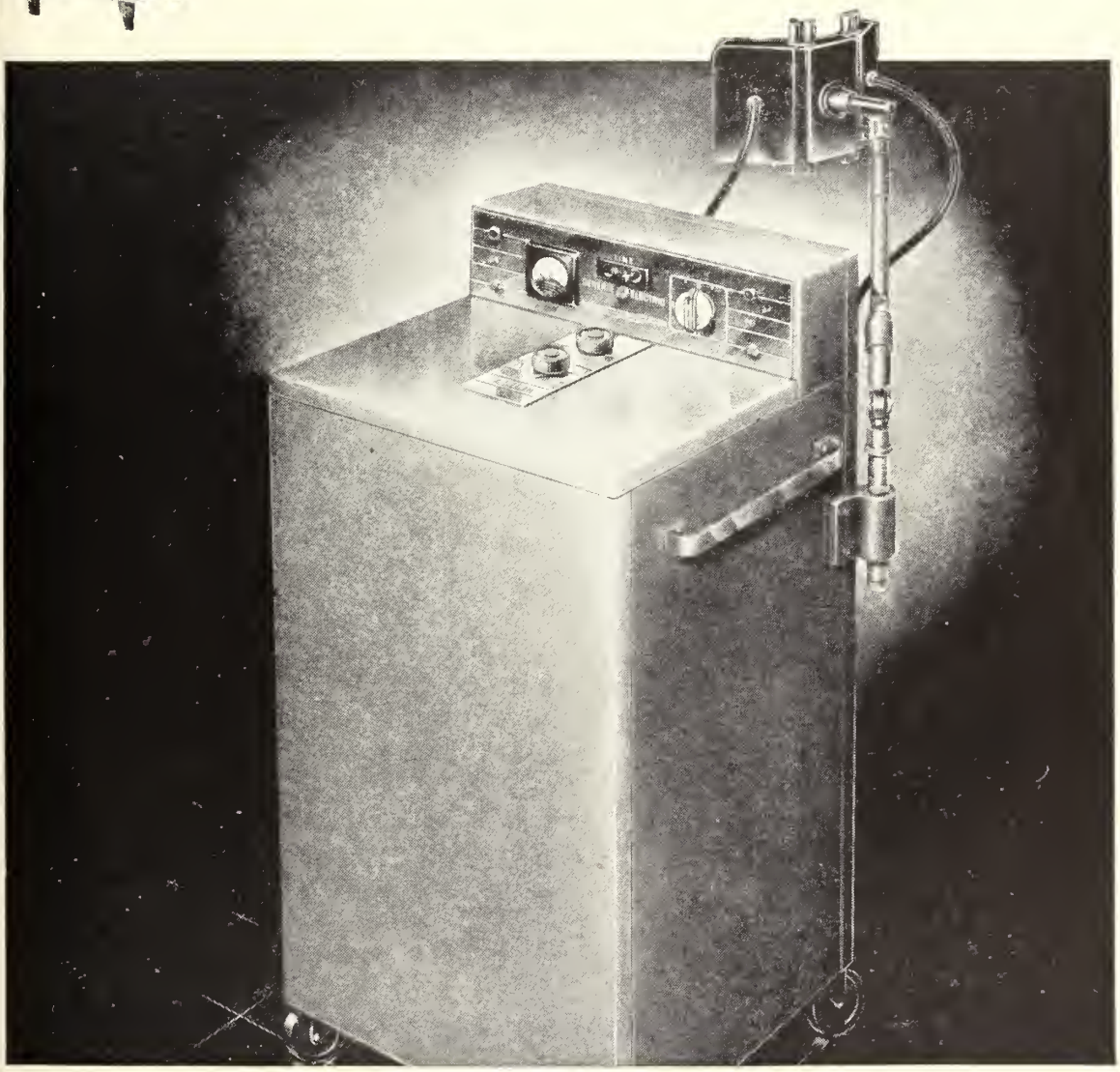
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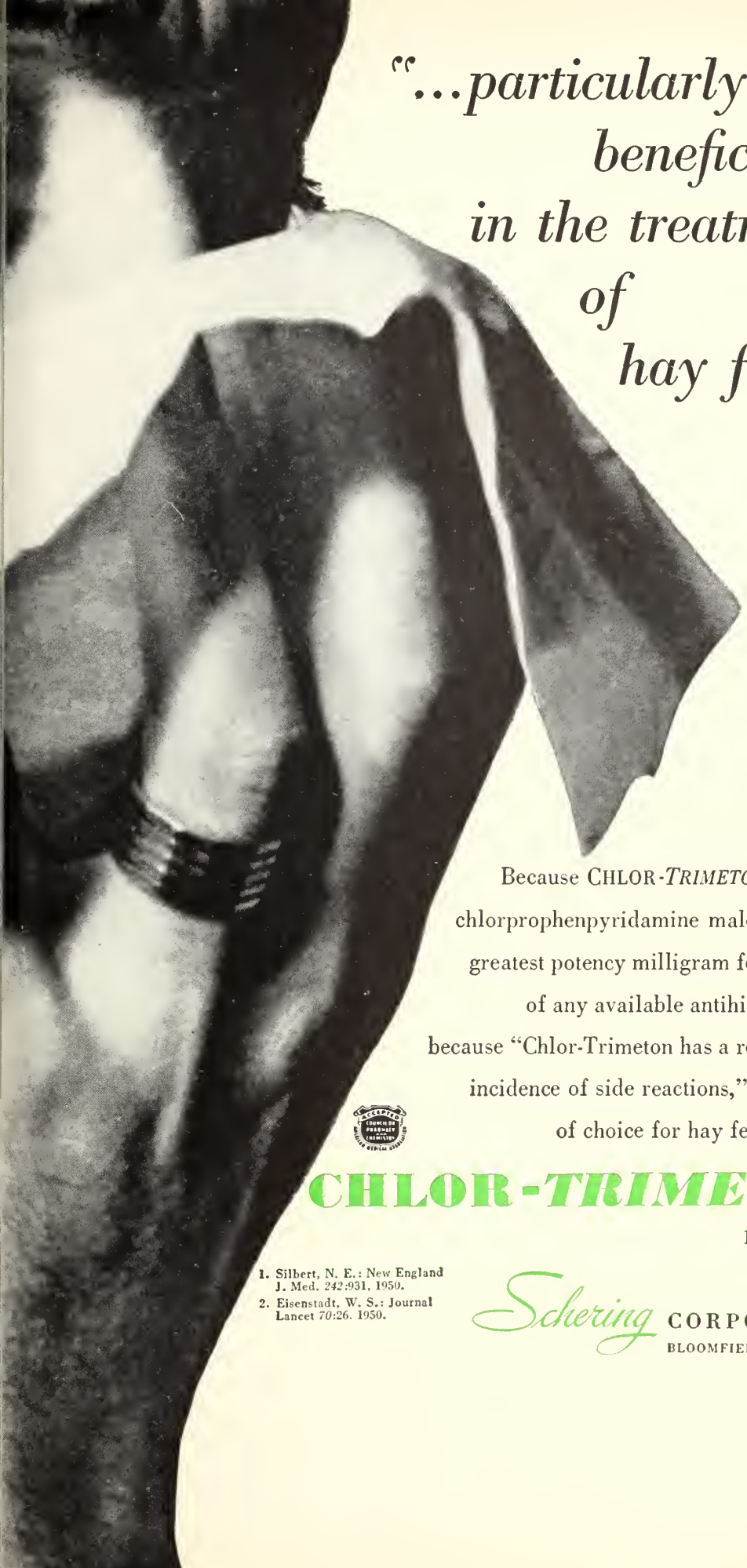
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*Hegsted, D. M.; Mann, G. V., and Stare, F. J.: Comments on Cholesterol, Editorial, Postgrad. Med. *11*:454 (May) 1952.

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1. Silbert, N. E.: New England J. Med. 242:931, 1950.
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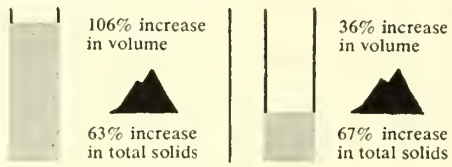
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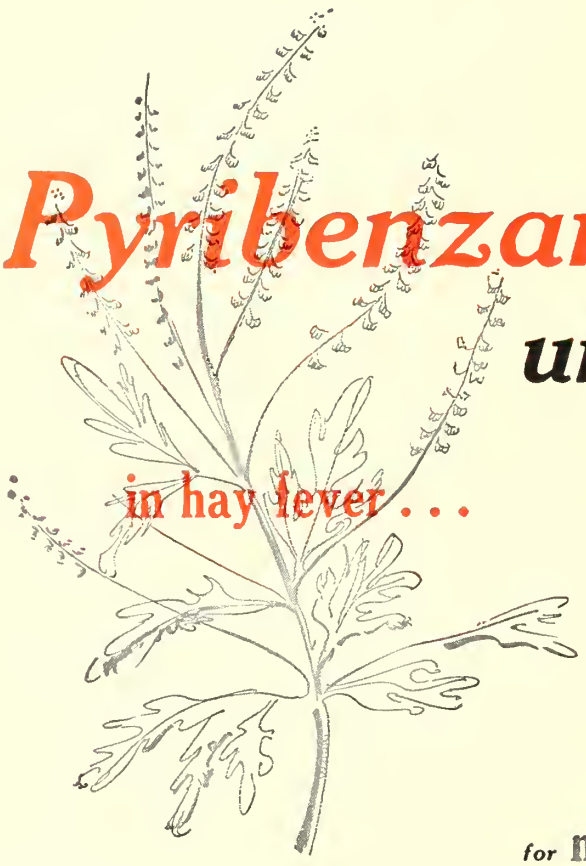
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Volume 49 July, 1952 Number 7

Scientific Articles

MANAGEMENT OF FRACTURES OF THE PATELLA

C. R. ROUNTREE, M.D.
OKLAHOMA CITY

THERE HAS BEEN a vast change in concept occurring in recent years with regard to the treatment of many fractures. Improvement in surgical technic, the advent of antibiotics and improved anesthesia has established open surgery in fresh fractures as an accepted procedure. It has been recognized for many years that fractures of the patella fall into the group requiring open surgery. Only recently has removal of the entire patella, or a portion thereof, been advocated. Perhaps the follow-up has not been extensive enough to warrant any definite conclusion. However, the results seem encouraging.

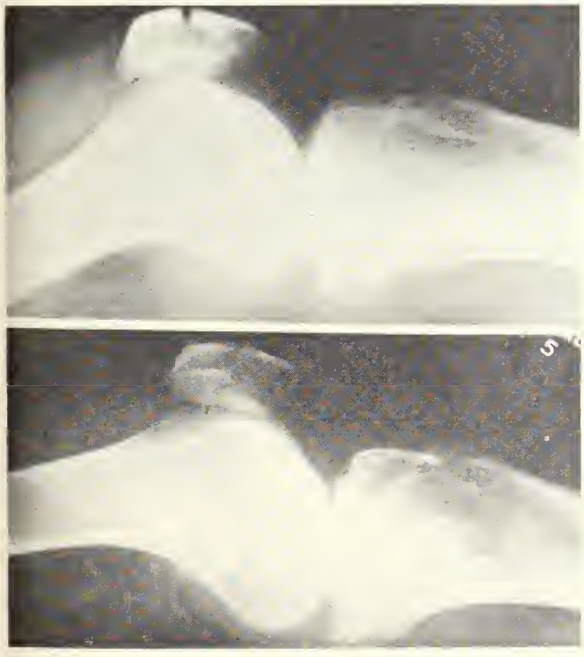


Fig. 1. Case 1. Female, aged 65, simple fracture without displacement. Treated in cylinder case for four weeks. A. Immediately after fracture. B. Four weeks later. Normal function of knee.

The management and treatment of fractures of the patella depend obviously on the nature and extent of the trauma. For the purpose of this discussion, I shall divide fractures into three groups.



Fig. 2. Case 2. Male, aged 30, marginal fracture not recognized until tangential view of knee was made. Fragment removed with good recovery.

GROUP I. SIMPLE FRACTURES WITHOUT DISPLACEMENT

In a few instances (six out of twenty-seven cases) the fracture line extended transversely across the bone without separation or displacement of the fragments. It may be complete or incomplete. Almost invariably, there is a great deal of pain and swelling in the knee joint, due principally to the intra-articular hemorrhage. This factor should be relieved by aspiration of the joint under local anesthetic. It is seldom necessary to repeat this procedure.

These cases are treated by splinting the knee in extension to prevent sudden forceful flexion movements which pull the fragments apart. This may be accomplished by any number of means. The method I employ consists in the application of a cylinder or sleeve cast. The leg is cleansed with alcohol and ether and a strip on each side

Presented at the 94th Annual Session of the Missouri State Medical Association, March 30-April 2, 1952, St. Louis.

painted with tincture of Benzoin compound. A strip of two inch adhesive tape, long enough so that each end can be turned back above and below the upper and lower end of the cast, is applied to the inner and outer side of the leg. A plaster cast extending from just above the ankle to the upper third of the leg is applied. The knee is held in five to ten degrees of flexion. After several layers of plaster have been wrapped around, each end of the tape is turned back and incorporated into the cast. This serves to secure the cast to the leg and prevent it from slipping down over the ankle. The patient remains ambulatory. Immobilization is continued for from three to four weeks which is sufficient time for the fracture to unite. Uniformly good results may be expected.

Another type, occasionally seen, is one in which a corner or margin of the bone, usually the inferior lateral pole, is broken off. This fracture is easily missed. X-rays made in the usual manner do not disclose it unless the fragment is quite large. I routinely employ, whenever possible, roentgenograms made in three planes. In addition to the usual anterior-posterior and lateral views, a third view is taken. This is made with the patient lying prone with the knee acutely flexed and resting on the x-ray plate with the tube pointing straight down. This gives an outline of the patella in the tangential view which shows the fragment clearly. I recommend excision of the fragment in these cases.

GROUP II. COMMINUTED FRACTURES, SIMPLE OR COMPOUND

These are, by far, the most common type. They may be either simple or compound. The patella may be extensively fragmented or the major damage may be confined to the upper or lower pole. There is always extensive damage to the capsule and fascia overlying the patella.

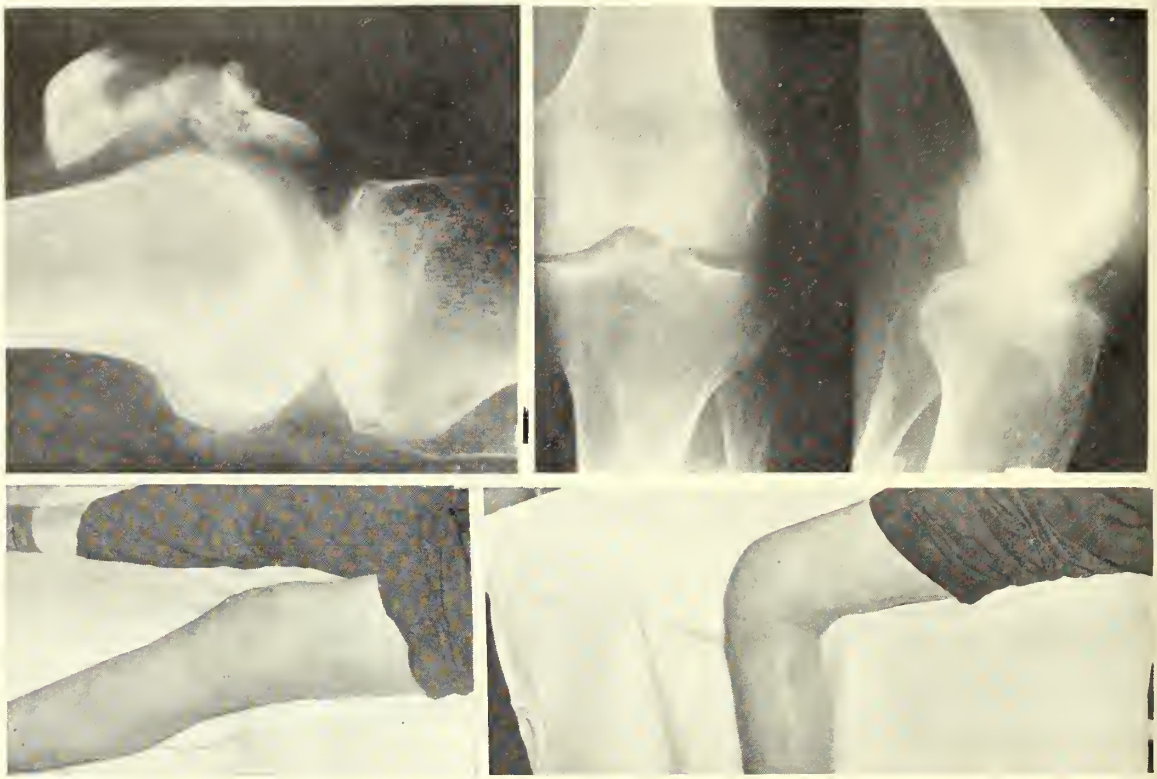


Fig. 3. Case 3. Male, aged 71, suffered severely comminuted fracture, left patella, not compound, in automobile accident on Sept. 19, 1951. Operation performed that day. Patella was removed. Four weeks later, patient was bearing full weight on the knee without pain. On Nov. 11, 1951, there was no pain, joint was stable and he had complete extension, flexion 90 degrees. Excellent quadriceps function. A. X-ray before operation. B. After operation. C. Extension six months after operation. D. Flexion six months after operation.

Until recently, the traditional method of treatment was to reduce the fracture by open operation, as accurately as possible, and retain reduction by some type of suture, or other internal fixation, and immobilize the extremity in plaster until union occurred. The long period of immobilization at least eight weeks) entailed by this method produced a great deal of joint stiffness which was difficult to overcome. Regardless of how accurate the reduction, roughness and irregularity on the articular surface of the patella is almost impossible to avoid. This invites arthritic changes in the patellar femoral compartment of the joint. As a matter of fact, many permanent stiff knees result either directly or indirectly from this treatment.

In recent years, I have employed partial or

complete patellectomy in this group of patients. There is still considerable difference of opinion about patellectomy. This is due to the fact that some patients develop persistent pain and weakness with an extension leg following removal of the patella.

According to some observers, the patella serves no purpose and the knee functions better without it. Brooke[1] studied his results in thirty cases in which the patella had been removed and concluded that the quadriceps mechanism functioned better without it. Bruce and Walmsley[2] concluded from an experimental study on rabbits that the patella played an important part in quadriceps function and that degenerative articular changes tended to follow its removal. In my opinion, the patella serves as a protective mechanism to the quadriceps muscle and as a fulcrum holding the muscle away from the knee so that a better leverage action is created. The smooth cartilagenous undersurface of the patella provides an easy, frictionless movement of the quadriceps mechanism across the knee joint. The patella, however, is only one component of the quadriceps muscle. The essential structure is the quadriceps tendon and its counterpart, the patella tendon. These structures must be sutured securely under proper tension following removal of the patella so that proper function of the patella mechanism is retained. In the final analysis, the basic lesion is a rupture of the quadriceps muscle with the



Fig. 4. Case 4. Female, aged 53, in automobile accident in 1940 suffered fracture of the right patella. It was sutured with stainless steel wire. There was no trouble until 1949 when the knee became painful. B. Wire loops broken, some fragments apparently in the joint. Patellectomy done. A. Complete recovery eleven months postoperative.

fracture of the patella only of secondary importance. Pain, weakness and instability of the knee following partial or complete patellectomy is largely the result of failure to maintain normal strength and tone in the quadriceps muscle. Patients who have to work on bended knees develop pain over the tibial tubercle from direct pressure because of loss of the protective influence of the patella to the knee joint. These instances are relatively uncommon. It is absolutely necessary to begin quadriceps exercises as soon as possible following injury or operation, and to continue them until maximum knee function has been restored. This applies not only to patients who have had either all or part of the patella removed but to simple fractures as well. I believe that complete removal of the patella is indicated in



Fig. 5. Case 5. Male, aged 42. A. Comminuted fracture distal one half of right patella. Distal fragment was removed and patella tendon sutured to the remaining fragment. B. Shows result several months later. Excellent anatomic and functional results.

extensively comminuted fractures. This is especially true of persons passed middle age who are almost certain to develop painful arthritic changes in the knee if this is not done.

Following operation, the extremity is immobilized in a cast for three weeks. During this time, the patient is taught to do quadriceps setting exercises. As soon as the cast is removed, additional exercises are begun. This procedure has been carried out in fifteen patients. Twelve patients have stable, painless knees and an excellent range of motion. All but two cases are more than one year postoperative. In two cases, the fracture was compound and had excellent end results.

GROUP III. FRACTURES CONFINED TO UPPER OR LOWER POLE OF THE PATELLA AND WHERE ONLY A PORTION OF THE BONE WAS REMOVED

In six instances (six out of twenty-seven) I have resected either the proximal or distal fragment suturing the tendon to the remaining fragment. When the remaining fragment is of

sufficient size and shape to fit into and follow along in the intercondylar notch, this procedure has given good results. If, however, the fragment does not follow smoothly across the joint with passive flexion and extension of the knee tested on the operating table, then it would be better to remove it because a painful, weak and perhaps unstable knee is apt to follow.

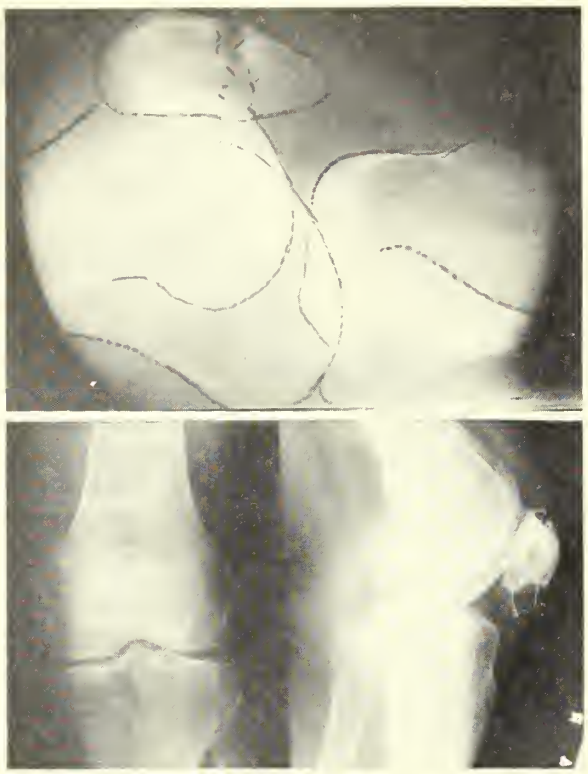


Fig. 6. Patient aged 65. A. Fracture of the right patella. At operation the distal half was removed. Patella tendon reattached to proximal fragment with stainless steel wire and chromic sutures. B. End result three years later. Normal function and appearance of the knee. Normal range of motion.

Following surgery, these patients are treated the same as those who have had complete patellectomies. I have been impressed with the results in this small series of cases.

SUMMARY

1. In the final analysis a fracture of the patella is really a rupture of the quadriceps mechanism of the knee joint.

2. The important consideration is restoration of function in the quadriceps muscle rather than union of the fracture.

3. The patella may be removed in toto or in part in selected cases with excellent functional results.

4. It is the responsibility of the surgeon to employ the best treatment which will get the patient back to work as quickly as possible with the best functional results.

DISCUSSION

Daniel L. Yancey, M.D., Springfield: I am glad of the opportunity to discuss this paper as I feel that fractures of the patella have been neglected and inadequately treated, resulting in many cases of unnecessary and prolonged disability. In considering fractures of the patella one is confronted with two important questions: first, should the patella be removed completely or in part, and, second, can one expect good joint function following the removal of the patella?

Dr. Roundtree has answered these questions in a satisfactory manner; however, there are a few points I would like to stress. I am one of those individuals who believes that the patella has a definite function and there is some degree of disability in the knee when it is removed. I believe the patella should be preserved, in whole or in part, whenever feasible. On the other hand, it should be removed when there are definite indications in order to decrease the degree of disability.

The fractures in group one usually result from indirect trauma and the articular cartilage is seldom disturbed, therefore patellectomy should never be considered except possibly in the aged individual in whom there are extensive preexisting arthritic

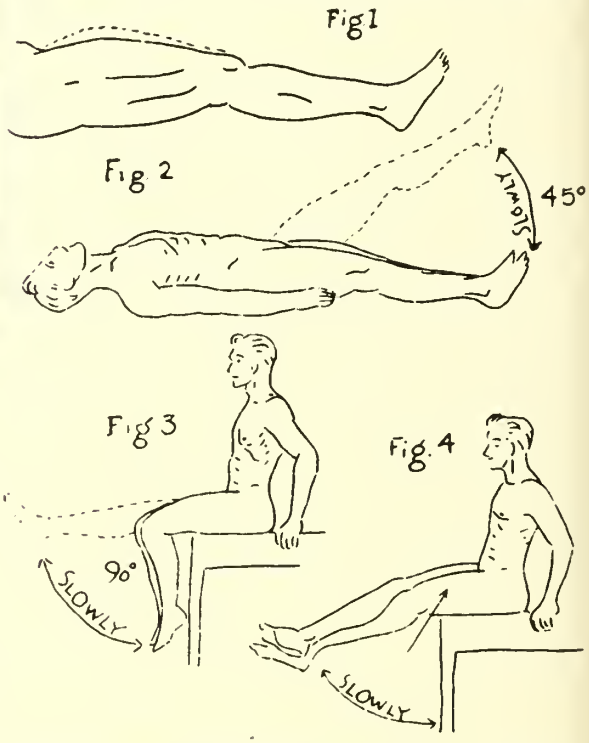


Fig. 7. Knee exercises are indispensible in maintaining quadriceps muscle tone and function.

changes and a period of immobilization may contribute to increased disability to the knee.

The fractures in group two are usually due to direct trauma and there is marked damage to the articular surface of the patella and often to the articular surface of the femur. It is impossible to replace or restore this cartilage and in these cases I

believe either a partial or complete patellectomy should be done, depending upon the area of the patella which is involved. Most important, of course, is the proper and adequate repair of the quadriceps mechanism.

In group three complete patellectomy is seldom indicated, but the offending fragments should be removed and the soft tissue damage repaired.

Complaints of aching, weakness, difficulty in running, walking, working on a ladder and stooping have been described by patients having had the patella removed. Such symptoms result not so much from the actual removal of the patella as from inadequate repair of the quadriceps mechanism and from delayed or inadequate rehabilitation following surgery. This is the point I would like to stress: the surgeon's responsibility does not cease with the removal of the cast but early and adequate rehabilitation is as important as the surgery itself in restoring the knee to good function with a minimal amount of disability.

525 N. W. 11th St.

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2. Bruce, J., and Walmsley, R.: Excision of the Patella, J. Bone & Joint Surg. 24:311-325 (April) 1942.

CLINICAL EXPERIENCE WITH UROKON SODIUM 30 PER CENT (pH 7) FOR CEREBRAL ARTERIOGRAPHY

WILLIAM B. SEAMAN, M.D.
ST. LOUIS
AND
HENRY G. SCHWARTZ, M.D.
ST. LOUIS

THIS IS A report of clinical experience in cerebral arteriography with a new radio-opaque material commercially designated as Urokon^R and having the chemical structure sodium 3-acetylamino-2,4,6-triiodobenzoate. This was used in the form of the 30 per cent solution buffered to a pH of 7, and differs from the Urokon sodium 30 per cent previously used for pyelography which had a pH of 4.8.*

During the last eight months it has been used in forty procedures on a total of thirty-six patients. Four patients were subjected to two examinations separated by an interval of several days. There were 142 intracarotid injections, using an average of 9.3 cc. per injection. It was felt that the immediate reactions to the injection were definitely less than those usually observed with other contrast media. The visible flush of the skin, momentary muscular stiffening and transient pupillary dilatation that invariably accompanied the intra-arterial injection of other radio-opaque materials were absent when Urokon was used. Subjectively the patients still experienced a hot flush during the injection. In most cases, injection was performed by the percutaneous technic, after local infiltration of the skin with procaine.

Complications following injection may be divided into two categories, major and minor. Minor reactions occurred in seven patients, an incidence of 17.5 per cent. In three patients there developed transient mild facial flush and burning on the ipsilateral side. A blood pressure rise of 40 mm. of Hg. associated with slight generalized jerking occurred in one patient. Another patient exhibited transient postinjection confusion which was almost certainly related to poor collateral circulation, since loss of consciousness had previously occurred after 50 seconds of carotid compression. Minor neurologic complications occurred in two patients and consisted of transient left facial paresis in one case. Transient mild hemiparesis in another appeared during carotid compression following withdrawal of the needle. The reactions disappeared in seven minutes.

Major complications were seen in three patients and a causal relationship to the administration of Urokon is extremely doubtful. One patient who died was found to have a hemorrhage into a glioma of the medulla and pons. During angiography this patient was maintained in a position of extreme hyperextension and it is conceivable that bleeding into the tumor might have been related to traumatic factors or to interference with venous return by way of the jugular veins. The other two major reactions were hemiplegias, occurring in patients with a history of previous episodes of hemiparesis.

Table 1. *Cerebral Angiography with 30 Per Cent Urokon*

Number of patients	36
Number of procedures	40
Total number of injections	142
Total amount of Urokon used	1322 cc
Average number of injections per patient	3.5
Average amount of Urokon per patient	9.3 cc
Number of Minor reactions	7
Per cent of minor reactions	17.5
Number of major reactions	3
Per cent of major reactions	7.5

CLINICAL ABSTRACTS OF CASES WITH MAJOR REACTIONS

Case 1. G. L. This 55 year old male entered the hospital complaining of tinnitus of five months duration. One month after the onset of the tinnitus, the patient noted diplopia which was followed by the appearance of right sided numbness, right hemiparesis and a left facial weakness. For just a few days prior to entry he had noted mild dysphagia and dysarthia. On admission to the hospital, examination revealed right hemiparesis and right hemihypesthesia. There were increased deep tendon reflexes on the right side and a positive Babinski reaction on the right side. There was evidence of a left abducens paralysis and a moderate left facial weakness. There was no definite evidence of involvement of the ninth.

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* Urokon supplied by the Mallinckrodt Chemical Works.

tenth or eleventh cranial nerves. An electro-encephlogram revealed a borderline mixed dysrhythmia in definite relation to the patient's complaints. The blood pressure was 115/80. On October 20, a right vertebral angiogram under local anesthesia was attempted. Direct injection of the right vertebral artery was unsuccessful. The right carotid artery was then punctured and the artery compressed distal to the needle, and the brachial artery occluded with a cuff. Two 10 cc. injections of 30 per cent Urokon and one 10 cc. injection of Diodrast were made with only partial visualization of the vertebral artery. This was followed by five injections of Diodrast. No untoward reactions were noted following any of these injections. A di-iodo-fluorescein test given two days following the arteriogram was normal. On October 24, a second angiogram was attempted again under local anesthesia. With the needle in the right common carotid artery, directed proximally, and with the distal common carotid artery and the brachial artery occluded, 20 cc. of 30 per cent Urokon was injected. Several minutes after the injection, the patient vomited and became unresponsive. Severe painful stimuli roused him only slightly. Extensor rigidity in the upper extremities as well as bilateral Babinski reaction were noted. The head and eyes were turned to the right. There was paresis on the left side initially which soon improved leaving some persisting weakness. Three hours later the patient was in a condition of decerebrate rigidity. The pulse was 40, respirations ceased and the blood pressure was 200/100. He was taken to the operating room, and emergency burr holes were made. A ventricular tap disclosed blood tinged cerebrospinal fluid under slightly increased pressure. Twenty-five cc. of fluid were removed and spontaneous respirations began. The patient remained unresponsive and pursued a steadily downhill course. Twenty-four hours after angiography the patient expired. At autopsy a glioma of the pons was found, with hemorrhage into the substance of the tumor.

Case 2. J. P. This 55 year old woman entered Barnes Hospital because of increasing left sided weakness of two months duration. At the time of entry, on December 19, moderate left hemiparesis was noted. The blood pressure was 168/88. Three days later percutaneous arteriography was done under local procaine anesthesia. Seven minutes following the injection the patient developed a complete left hemiplegia with conjugate deviation of the eyes and loss of consciousness. Twenty-four hours later the patient was comatose and in a decerebrate condition with a dilated fixed right pupil and the eyes fixed in extreme lateral deviation. Craniotomy disclosed a 2 centimeter metastatic tumor high in the right parietal region. The patient expired the day following craniotomy.

Case 3. G.L.K. This 57 year old Negro female was admitted to Barnes Hospital in May 1951 because of blurred vision of three weeks duration. Examination disclosed weakness of the right medial rectus, hypertension (160/90) and evidence of arteriosclerosis of the retinal vessels. After some improvement she was discharged with a diagnosis of cerebral thrombosis and hypertensive cardiovascular disease.

She remained well until six months later when she had several generalized convulsions followed by aphasia and right hemiplegia. This slowly subsided and at hospital entry one week later the aphasia had cleared although there was still moderate right sided weakness, with central type of paresis of the right facial nerve, right hemihypalgesia and hypesthesia. The clinical impression was thrombosis of the left superior cerebellar artery. The spinal fluid was normal. On December 11 percutaneous cerebral arteriography was done under local procaine anesthesia. One injection of 10 cc. of 30 per cent Urokon was given with no noticeable reaction. After prolonged manipulation of the needle for a second injection the patient developed stertorous respirations, aphasia and a complete paralysis of the right upper extremity. No loss of consciousness occurred. Two days later she was able to speak but there was no change in the right sided weakness. She was discharged December 24 with only slight improvement in muscle strength.

DISCUSSION

Of the seven minor reactions only the two associated with mild neurologic signs, i. e., transient facial paresis and transient mild hemiparesis are probably of any clinical significance.

Although one patient died subsequently to angiography, it is felt that the autopsy findings constituted an adequate explanation of his death, and is unrelated to the use of contrast media. The second major reaction consisted of an accentuation of symptomatology that had been present only a week before, and it is probable that the injection of Urokon was related only coincidentally and not causally. The reaction observed in the third patient was also an accentuation of symptoms and signs previously present. Both of the latter patients were hypertensive and arteriosclerotic, which may constitute complicating factors and probably increase the hazards of arteriography.

On the basis of this limited clinical experience with Urokon sodium 30 per cent for cerebral arteriography it is felt that it is a promising radiopaque medium and certainly warrants further extensive clinical trials.

Addendum: Since preparation of this manuscript the manufacture of Urokon sodium 30 per cent with a pH of 4.8 has been discontinued. All Urokon sodium 30 per cent which is now available is buffered to a pH of from 7 to 7.4.

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Comparative Response to Common Methods of Therapy in Distal Colon Stasis*

Number of Hours Residue is Retained	24	48	72	96	120	144	168
Control (No Therapy)				○ ○ ○	○ ○ ○ ○ ○ ○	○ ○ ○ ○ ○ ○	○ ○ ○
METAMUCIL	● ● ● ● ● ● ● ●	● ● ● ●	● ● ●	●	●		
Enemas	●	● ●	●	● ● ●	● ● ● ●	● ● ●	● ● ●
Antispasmodics				● ● ●	● ● ● ● ●	● ● ● ●	● ● ●
Mineral Oil		●		● ● ●	● ● ● ● ●	● ● ● ●	● ● ●

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*Barowsky, H.: A Roentgenographic Evaluation of the Common Measures Employed in the Treatment of Colonic Stasis, Scientific Exhibit, National Gastroenterological Association, Chicago, Sept. 17-22, 1951.

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One must consider that Cortisone could similarly aggravate tuberculosis in the human.

HART, P. D'Arcy, and Rees, R.J.W., Lancet 2:391-395, Sept. 23, 1950.

Pathologically Speaking

CELL STUDY OF SECRETIONS

WHENEVER abnormal amounts or abnormal types of discharge are encountered, the possibility of malignancy must be included in the differential diagnosis, and whenever such discharges or secretions are so located as to be accessible to aspiration, either under direct vision or by puncture of a space and aspiration, the fluid removed should be measured, the specific gravity determined, gross color and turbidity noted, and then some of the centrifuged sediment should be used for cell study.

If fluid is to be mailed to the laboratory before centrifuging, formalin should be added in amounts of 1 c.c. of 10% formalin to every 10 c.c. of fluid (to preserve cellular outline). On the other hand, if the fluid is to be centrifuged and smeared before mailing, the sediment should be dropped onto one slide, another slide dropped over it, pressure exerted to spread evenly the material between the slides, and then place the slides immediately—while still wet—into a Coplin jar or a mailing bottle containing 95% alcohol, which fixes the material to the slide. Putting a paper clip over one end of each slide will serve to keep the slides separated from each other.

Such a procedure is now applicable to aspirated pleural or peritoneal fluid, exudates anywhere on the skin or mucous membrane surfaces, sputum specimens, centrifuged urine sediments, fasting gastric secretions, cervical and vaginal discharges and abnormal discharge from the breast.

It must be emphasized that whenever highly suspicious symptoms and signs exist, such as tumor, bleeding, pain, weight loss, etc., but the smear is negative for suspicious cells, the physician must pursue the diagnosis further with biopsy, exploration, or whatever other procedures are indicated. A negative smear should never be taken as final evidence of the absence of malignancy.

RALPH EMERSON DUNCAN, M. D.
LORAINE E. SCHULTZ, M. D.
ALBERT E. UPSHER, M. D.

Postgraduate Review

RENAL FAILURE

FRANZ U. STEINBERG, M.D.
ST. LOUIS

THE CLINICIANS'S outlook upon renal failure has changed in recent years. At one time the condition was thought to be uniformly fatal. It is realized now that the prognosis of uremia depends on the underlying cause and that kidneys may fail and yet recover. Active therapy based on sound physiologic principles is therefore indicated. This paper will review some of the principles which underlie rational and effective treatment.

The formation of urine involves two separate processes. In the glomerulus a protein free filtrate of the blood plasma is formed in a volume much in excess of that which finally leaves the kidneys as urine. One hundred and twenty cc. of glomerular filtrate are formed per minute (180 liters in twenty-four hours), but only about one hundredth of this amount is finally eliminated. The remainder is reabsorbed during the passage of the filtrate through the renal tubules. The quantity of water reabsorbed depends upon many factors. The more solutes excreted by the kidney, the more water will be eliminated. The antidiuretic hormone of the posterior pituitary plays an important role in conserving water for the body's needs.[1]

The tubular epithelium deals individually with various substances in the glomerular filtrate; they can be roughly classified as follows:

1. *Metabolites not Present in the Urine.*—These substances which pass through the glomerular filter are almost completely reabsorbed as the filtrate passes down the tubule. Glucose is an outstanding example of this group.

2. *Waste Materials Which Are Eliminated in Maximum Quantities.*—These substances are either not reabsorbed in the tubule or are reabsorbed in small amounts. Their concentration in the final urine is much higher than in the blood, due to reabsorption of water (urea, uric acid, phenols).

3. *Substances the Reabsorption or Rejection of Which Is Governed by the Needs of the Total Organism.*—This group includes water and electrolytes. Here the kidney exerts its most precise function of regulation.

4. *Chemicals, Foreign to the Body, i.e., Various Drugs and Dyes.*—These materials are eliminated by different mechanisms, but frequently secretion by the tubular cells play an important part. Some of these chemicals, such as phenolphthalein or p-aminohippuric acid, are used to determine tubular function.

Failure of the kidney affects substances in the second and third groups. At one time uremia was looked upon simply as a poisoning caused by retention of waste products. However, a truly toxic agent has never been identified among the various substances retained in uremia, and this oversimplified concept is no longer tenable. It is now realized that many factors contribute simultaneously to produce the deleterious effects of renal failure. Among these the disturbance in the water and electrolyte metabolism have assumed particular importance because of the fact that they are amenable to therapy.

Elimination of Waste Products.—The waste products eliminated by the kidney are largely derived from protein metabolism. Among them urea is quantitatively predominant. Even though it is not toxic, the study of the behavior of urea is important in any investigation of renal failure. Addis[2] and others[3] have computed the osmotic work performed by the kidney; they found it dependent almost entirely on the amount of urea excreted, while other urinary constituents played less important roles.

The concentration of urea in the glomerular filtrate is identical with its concentration in the blood plasma. As the glomerular filtrate flows through the tubules, water is reabsorbed to a much greater extent than urea. Consequently, urea concentration rises steadily as the urine flow progresses distally in the tubule. In the final urine the urea concentration may be sixty times higher than in the glomerular filtrate. However, a certain fraction of the filtered urea is reabsorbed in the tubules. This fraction becomes smaller the more the rate of urine flow is increased.

The reabsorption of water from the distal tubule against a constantly increasing urea concentration in the tubular fluid requires considerable osmotic work. The damaged kidney may not be able to perform this work, and therefore excess water may be lost in the final urine. The failing kidney may still be able to excrete urea and other waste in sufficient quantities, but it can do so only by putting out large volumes of dilute urine because its concentrating power has failed. The polyuria of chronic renal disease, therefore, serves a useful purpose by enabling a failing kidney to eliminate waste fairly completely, though under less favorable conditions and with greater expenditure of water. The mechanism of isosthenuria is not fully understood, but clinical observations and experimental work have indicated that it may be reversible if kidney function improves.[1] The foregoing discussion indicates that concentration and dilution tests can serve as a measure of tubular function.

When the kidney fails, urea begins to accumulate in the blood. A rise of the nonprotein nitrogen fraction is looked upon as an ominous sign

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of renal failure. On the other hand, it is important to realize that the increase of blood urea concentration serves a useful purpose in aiding the elimination of urea.

In renal failure the glomerular filtration rate falls, so that less urea is filtered and less is excreted. The urea concentration in the plasma then rises. This in turn increases the total amount of urea filtered. For example, if the normal glomerular filtration rate is 120 cc. per minute and the urea nitrogen in the plasma is 10 mg. per cent, the total amount of urea-N filtered per minute will be 12 mg. If the glomerular filtration falls to 60 cc. per minute, only 6 mg. of urea-N will be filtered per minute. However, when the urea nitrogen in the plasma and glomerular filtrate has risen to 20 mg. per cent, the total amount of urea-N filtered will again be 12 mg. per minute. Therefore, a rise of the blood urea facilitates the excretion of nitrogenous waste in the face of a falling glomerular filtration rate. This observation explains the well known clinical phenomenon that an elevated nonprotein nitrogen need not rise steadily but may remain constant for a long period of time until further renal damage and further reduction of the glomerular filtration rate force it to higher levels. Determination of the blood urea or nonprotein nitrogen serves as a rough test of glomerular function.

The urea clearance, by definition, relates the rate of urea excretion to the urea concentration in the plasma. It is a widely used kidney function test, which also expresses glomerular activity. Urea clearances are accurate only with large volumes of urine flow. The results vary inversely with the blood urea concentration over the entire scale of values. Even small decreases in the urea clearance can cause a rise in the nonprotein nitrogen. The statement that an elevated nonprotein nitrogen is found only when the urea clearance is reduced to 25 per cent of normal is not supported by facts.[4]

Other metabolic products of protein break-down are considered briefly.

Creatinine.—This substance is present in the blood in a normal concentration of less than 2 mg. per cent. "Endogenous" creatinine (i.e. creatinine formed in body metabolism) is filtered by the glomeruli and remains untouched by the tubular cells. Therefore the endogenous creatinine clearance may serve as a measure of glomerular filtration rate.[5] In renal failure creatinine accumulates in the blood but more slowly than urea. Blood creatinine becomes elevated only when renal failure is far advanced. The increase of blood creatinine, therefore, points to a poor prognosis.

Uric acid is excreted by glomerular filtration. Part of the filtered uric acid is reabsorbed by the tubules.[6] The serum uric acid fraction also rises in uremia.

Amino Acids.—Their normal concentration in the plasma has been given as from 3 to 4 mg. per cent.[7] Amino acid nitrogen rises in renal failure often without correlation to other kidney functions.

Ammonia is formed from amino acids by the tubular cells. The production of the ammonium ion constitutes an important sodium saving device as will be discussed later. In renal failure the ammonia excretion is decreased since less is produced by the tubular cells. Its blood level does not rise.[7]

Phenols were at one time looked upon as the toxic substances responsible for the fatal outcome of uremia. Recent studies have disproved this concept.[8] While blood phenol levels rise in uremia, there is no correlation of clinical symptoms to the blood phenol concentration. Schmidt et al.[9] found that only the relatively nontoxic conjugated p-cresol-phenol was elevated in uremia, while the toxic free p-cresol-phenol level remained normal, regardless of severity of uremic symptoms.

Guanidine blood levels are increased in uremia. Experimental guanidine intoxication in dogs produces symptoms similar to the clinical picture of uremia. However, the blood levels in these experiments were much higher than those found in human uremia. Olsen[8] found a poor correlation of blood guanidine levels to uremic symptoms.

Electrolyte Metabolism in Renal Failure.—The composition of the body fluids with respect to water and electrolytes is kept rigidly constant. The normal kidney exercises an important function of regulation. Excesses of salt and water are promptly eliminated and, if deficiencies occur, the kidney drastically reduces the elimination of water and retains all of the salt. The diseased kidney fails in this function, and the resulting upset in body fluid composition is responsible for many of the serious effects of renal failure.

Forty per cent of the body weight of the adult organism is taken up by the intracellular fluid, 15 per cent by the extracellular fluid including the blood plasma.[10] In the cells potassium is the chief base; sodium is the chief cation of the extracellular fluid. Chlorides and bicarbonate are the most prominent anions of the extracellular compartment. The separation of intracellular and extracellular fluid is not as rigid as was once believed. It has been demonstrated that potassium and sodium can replace each other in the cells to a considerable extent. The prominent position of sodium becomes obvious on inspection of Gamble's diagram (fig 1). On the anion side an excess of chloride can be compensated by a decrease of the bicarbonate fraction. Bicarbonate is easily expendable since it can be converted to CO_2 which is eliminated through the lungs. The opposite effect goes into play if the chloride concentration is reduced. The bicarbonate fraction then expands and the total anion concentration remains the same. No such compensatory mechanism is available for increase or decrease of the serum sodium, and it is for this reason that the

ion occupies a pivotal position in the electrolyte household.

Sodium is present in the glomerular filtrate in the same concentration as in the blood plasma. Variable quantities are reabsorbed from the tubular fluid. The factors regulating the degree of sodium reabsorption are not fully understood.[12] The normal kidney responds to a lowering of total body sodium by increasing tubular reabsorption, and vice versa. The adrenal cortex probably plays an important role in this regulatory mechanism.[13]

In acute glomerular nephritis glomerular filtration is impaired more than tubular reabsorption. Consequently renal concentrating power is not reduced. Since tubular function is less disturbed, a large portion of the filtered sodium may be reabsorbed. Salt and fluid retention and then edema develop. This situation closely resembles the chain of events presumed to occur in congestive circulatory failure in which a diminishing cardiac output and renal circulatory insufficiency may influence sodium and water retention.

In chronic renal failure the opposite situation may occur. In this condition the tubules are damaged and fail to reabsorb sodium in sufficient quantities. Several factors participate in producing the salt deficiency, frequently seen in chronic renal disease.

1. Acid radicals (phosphates, sulfates) are produced in excess due to accelerated tissue breakdown. They require more base for neutralization.

2. The normal renal tubule forms ammonium and substitutes it for Na in the final urine. This sodium saving device is curtailed in renal failure.

3. Similarly, the normal tubule can exchange H ion for Na ion. This mechanism is also disturbed, a fact which leads to further wasting of sodium.

4. It has been pointed out before that the failing kidney with impaired concentrating ability needs large volumes of urine to excrete nitrogenous waste products. While this increase of urinary volume facilitates the excretion of urea, it renders more difficult the reabsorption of substances which should be preserved. Sodium must be reabsorbed from a dilute tubular fluid, and the damaged tubular cell can ill afford this additional expenditure of osmotic work. A wastage of sodium again occurs.

An extreme of this condition is the salt losing nephritis first described by Thorn.[14] Here the patients excrete large quantities of salt containing urine, and salt depletion develops rapidly. The clinical picture resembles Addison's disease, but cortical steroids are ineffective and only adequate salt administration can correct the situation.

Loss of sodium in excess of water leads to hypotonicity of the extracellular fluid. This in turn decreases glomerular filtration rate and further lowers the efficiency of kidney function. In this situation the cautious administration of hypertonic sodium solutions may be indicated. On the other hand hypertonicity of the extracellular fluid has been described also. The organism tolerates such distortion of the electrolyte pattern poorly. It may lead to a rapidly fatal outcome due to cellular dehydration. This picture has been observed to follow sulfonamide intoxication.[15, 16]

Potassium.—Potassium is essentially an intracellular base and appears in the extracellular

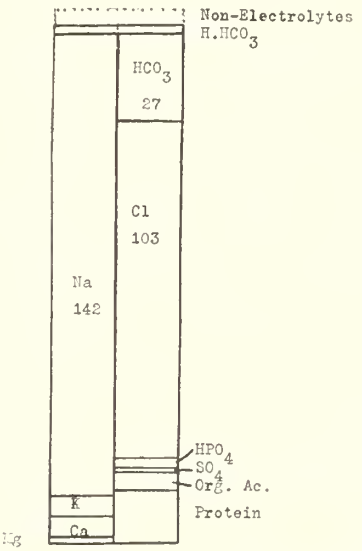


Fig. 1. Electrolyte composition of blood plasma. Figures in milliequivalents per liter. Chart after Gamble.[11]

fluid in small quantities. It has definite pharmacologic effects especially on the myocardium and skeletal muscle. Potassium retention is observed in anuria and extreme oliguria. Its toxic effects may be responsible for the patient's death. Hyperkalemia produces a typical electrocardiographic picture consisting of peaked tall T waves and intraventricular conduction defects. High potassium levels lead to cardiac arrest in diastole. Peripheral effects are muscular weakness and parasthesias.[17]

Excessive urinary volumes may cause potassium depletion. Potassium deficiency may be associated with hypochloremic alkalosis as discussed later. Lowering of serum potassium leads to muscular weakness and lassitude. When those symptoms occur in the course of renal disease, the possibility of hypokalemia must be considered.[18, 19]

Therapeutic Considerations.—The treatment of renal failure should include two general objectives: (a) to relieve the kidney of as much work as possible and (b) to retain the electrolyte composition of the body fluids as close to normal as possible.

Addis has emphasized the importance of a low protein diet in renal failure.[2] His suggestion is based on the premise that if less protein is metabolized, less urea is formed, and the kidney

is spared the task of eliminating large quantities of this waste product. Addis' clinical and experimental data are impressive, and generally the use of a low protein diet appears advisable in renal failure. The experience with Kempner's rice diet has demonstrated that an extremely low protein intake is well tolerated for long periods of time. Watkins et al.[20] have shown that a negative nitrogen balance is present only in the initial

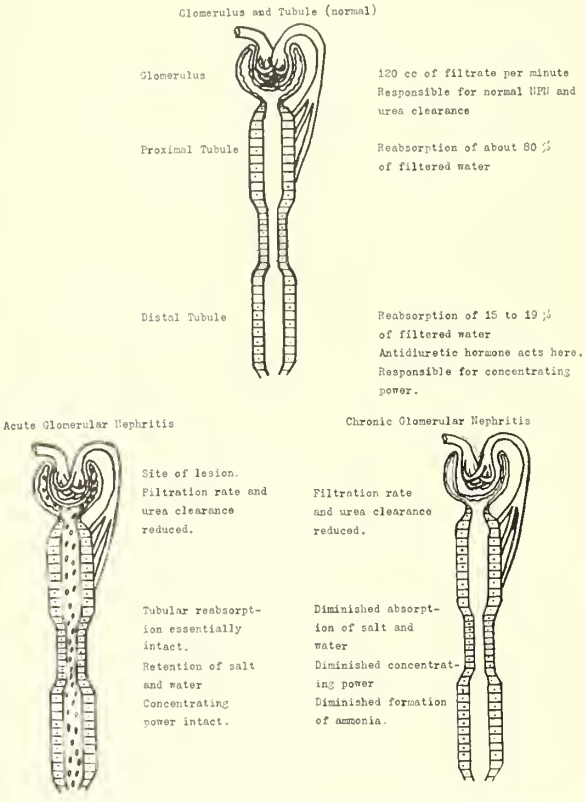


Fig. 2. Glomerulus and tubule, normal and in nephritis.

period of protein restriction. It is replaced by a period of satisfactory nitrogen equilibrium provided the total caloric intake is adequate.

Fluid intake should be restricted in the presence of oliguria and anuria, as frequently encountered in lower nephron nephrosis and acute glomerular nephritis.[21] It is not possible to force an anuric kidney to produce urine by flooding the body with fluids. Such attempts lead only to dilution of the body fluids and further distortion of the electrolyte composition. Daily fluid intake must be restricted to 750 cc. (to cover water loss by insensible perspiration) plus the volume of fluid lost in the urine, stools, vomitus and excessive perspiration.

In chronic glomerular nephritis with polyuria, fluid intake should be liberal. The kidney must be provided with enough water to allow excretion of large quantities of dilute urine to compensate for loss of concentrating power. Determination of the urinary volume and of fluid losses through other channels can serve as a guide to the estimated fluid requirements.

In the polyuric phase the kidney is apt to waste sodium chloride, and therefore salt intake should not be restricted. The only exception relates to the presence of congestive failure or extreme hypertension, in which some compromise is necessary. The twenty-four hour output of chloride in the urine may serve to indicate how much salt should be given.

In the presence of oliguria or anuria sodium must be withheld or given sparingly, except in the presence of a low serum sodium which is found occasionally following a period of excessive hydration. In such cases the administration of hypertonic saline may correct the electrolyte imbalance and increase the glomerular filtration rate. Hence the serum sodium should always be determined in oliguric patients.

Complications of renal failure may alter greatly the plan of treatment. Diarrhea can lead to excessive loss of alkali. In this case sodium lactate or sodium bicarbonate must be used to combat acidosis. Vomiting of acid gastric juice may lead to alkalosis and excessive losses of chloride. Here the administration of ammonium chloride may be indicated. It has been shown recently that alkalosis is often associated with hypokalemia.[22] If this is the case, only the simultaneous administration of potassium can restore acid base balance.

Potassium retention becomes a problem in anuria or extreme oliguria. Potassium is toxic and its removal by extrarenal channels, i.e., the artificial kidney, peritoneal irrigation or irrigation of an isolated loop of bowel, may be called for. Recent studies suggest that cation exchange resins may be useful in removing potassium from the intestinal tract.

Retention of phosphates may lead to low levels of ionized serum calcium and tetanic seizures. In this case calcium must be administered. Phosphate retention can be combatted by oral aluminum hydroxide gels which combine with the phosphates and prevent their intestinal absorption.

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BOOK REVIEWS

CALLANDER'S SURGICAL ANATOMY—Third Edition, with 929 Illustrations, by Barry J. Anson, M.A., Ph.D. (Med. Sc.) Professor of Anatomy, Northwestern University Medical School and Walter G. Maddock, M.S., M.D., F.A.C.S. Elcock Professor of Surgery, Northwestern University Medical School. W. B. Saunders Co., Philadelphia-London, 1952. $14.00.

Drs. Anson and Maddock's revision of the standard "Callander's Surgical Anatomy" is in line with the past high quality of this standard work. It remains the standard quick reference book for basic anatomy that it has always been. The illustrative diagrams are the most worth while feature of the volume. The discussions of anatomy are clear and concise. It is only when the authors begin discussion of treatment of various conditions that the book is weak. However, most people use this work for a quick refresher in local anatomy and for this purpose it remains unexcelled. A. M. R.

HANDBOOK OF MEDICAL MANAGEMENT, by Milton Chatton, A.B., M.D., Instructor in Medicine, University of California Medical School, San Francisco; Sheldon Margen, A.B., M.D., Clinical Instructor in Medicine, University of California Medical School, San Francisco; Henry D. Brainerd, A.B., M.D., Assistant Clinical Professor of Medicine and Pediatrics, University of California Medical School, San Francisco; Assistant Clinical Professor of Pediatrics, Stanford University School of Medicine; Physician in Charge, Isolation Division, San Francisco Hospital. Second Edition. University Medical Publishers, Post Office Box 761, Palo Alto, California. 1950-1951. Price $3.00.

This 508 page "Handbook of Medical Management" by University of California authors is a surprisingly complete and practical handy reference. It is well outlined, using short concise statements, avoiding debatable material and carefully including the essential known facts about pathogenesis, clinical picture and treatment. Many facts are summarized in tables for instant use. For house officers the inclusion of standard index numbers is an added advantage.

This volume definitely achieves its purpose—to aid the physician in an emergency so that proper therapy may be started as soon as possible. Its pocket size makes it an excellent addition to the medical man's emergency kit or glove compartment. Unfortunately, this useful book should be bound in a more serviceable cover than the hard paper in order that it might be a more lasting companion to the physician. S. L. G.



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Case Report

THE SURGICAL TREATMENT OF HEMATEMESIS DUE TO ESOPHAGEAL VARICES FROM PORTAL CIRRHOSIS BY LIGATION OF THE HEPATIC AND SPLENIC ARTERIES

REPORT OF A CASE

PAUL A. KNEPPER, M.D.
ST. JOSEPH
LUCIEN W. IDE, M.D.
ST. JOSEPH
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THE TREATMENT of gastrointestinal hemorrhage as a result of cirrhosis of the liver with portal hypertension has been of special interest for many years. The prognosis in hemorrhage from esophageal varices is poor. In a series of thirty patients reported by Moser et al., seven died of the first hemorrhage, eight of eighteen died of the second hemorrhage and two of four patients died of the third hemorrhage.[1] In another series of 386 patients with portal cirrhosis who had hematemesis, about one third died of the first hemorrhage and an additional one third at the end of the first year.[2] Many varieties of shunt operations have been attempted to relieve portal hypertension with moderate success. Berman[5] reported his results of ligating the hepatic and splenic arteries before the annual Western Surgical Meeting in 1950. Since that time approximately fifty such operations have been performed. This procedure with the resulting decreased amount of blood going through the cirrhotic liver, thus decreasing the pressure in the portal system, may prove to be much more successful than the better known shunt operations. The use of the Silverman needle in obtaining liver biopsies prior to surgery is a convenient method in making the exact diagnosis. The operations should not be performed unless the patient is desperately ill and all other attempts at therapy have failed. Recurrent ascites may be relieved by this procedure.

A case that was seen recently is considered worth reporting because ligation of the hepatic and splenic arteries appeared to terminate episodes of repeated hemorrhages from esophageal varices due to portal cirrhosis. The procedure has not been used widely.

CASE REPORT

A 37 year old, white female was first seen in the Clinic on September 9, 1951, following a severe episode of hematemesis with weakness, pallor and air hunger of a few hours' duration and was admitted promptly to the Missouri Methodist Hospital. Within the previous year she had been hospitalized on four different occasions for severe gastrointestinal hemorrhage, usually requiring five or six transfusions for survival. There was a long history of consuming large quantities of beer before the onset of her illness.

The essential features of the physical examination included an enlarged spleen extending three or four inches below the costal margin. The liver was palpable two inches below the costal margin. There was a loud systolic murmur and accompanying thrill elicited over the precordium suggesting an interventricular septal defect. The heart was generally enlarged but there were no signs of left or right ventricular failure.

The hemoglobin was 58.3 per cent, the red blood count was 3,000,000 and the white blood count was 5,900. The prothrombin level was 67 per cent of normal, and a thymol turbidity test was negative. A platelet count of the peripheral blood was 157,990. A cephalin flocculation test was negative after 48 hours, and the total plasma proteins were 4.68 grams per 100 cc. with an albumin fraction of 2.95 and a globulin fraction of 1.75 grams. A bone marrow aspiration was interpreted as normal except that it was estimated that there was a deficiency of platelets and megakaryocytes. A liver biopsy done with a Silverman needle revealed a microscopic pattern compatible with portal cirrhosis. An x-ray examination of the esophagus and upper intestinal tract after a barium meal revealed fairly large mucosal distortions with finger-like projections into the barium column in the lower esophagus compatible with moderately large esophageal varices. No other lesion in the gastrointestinal tract was demonstrable which could have caused hematemesis.

The patient was discharged from the hospital on September 25, 1951, with a diagnosis of portal cirrhosis with portal hypertension and associated hemorrhage from esophageal varices and a congenital interventricular septal defect.

She was readmitted to the Missouri Methodist Hospital on December 6 because of another episode of severe hematemesis. At that time the hemoglobin was 58 per cent of normal (100 per cent = 13.5 grams), erythrocyte count was 3,100,000 and the leukocyte count was 4,500 with a normal differential count. The prothrombin level was 74 per cent of normal. The plasma protein determination revealed the albumin fraction to be 3.2 grams and the globulin fraction to be 2.5 grams per 100 cc. Another needle biopsy of the liver confirmed the previous diagnosis of portal cirrhosis. It was our combined opinion that unless some surgical procedure was done the patient could not survive because of the prospect of more hemorrhages. So on December 13, 1951, the abdomen was explored through an upper midline incision. The liver was found to be cirrhotic with multiple areas of regeneration of tissue. The spleen had a smooth surface and was approximately the size of a small football. The liver was approximately twice normal size. The portal system was canulated with an 18 gauge needle, and a direct reading in a vertical type of manometer was found to be 32 centimeters of water. The hepatic artery was approached through the gastrohepatic ligament and isolated between its

origin from the celiac axis vessel and the point from which the gastroduodenal artery arises. A bulldog clamp was applied at this location. The splenic artery was approached through the gastrocolic ligament and isolated near the spleen. A bulldog clamp was placed on the artery at this position. Another determination of the pressure in the portal system was taken in the manner as described above and found to be 18 centimeters of water. A double ligation of each vessel in continuity with silk was then done where the clamps had been applied. Exploration of the abdomen was negative otherwise. Another biopsy of the liver was taken and again found to be compatible with portal cirrhosis and showed considerable increase of fibrous tissue with regenerative nodules. The operation technically was not difficult in spite of moderate varices around the celiac axis. The abdomen was closed in layers without drainage.

When the patient was returned to her room after the operation, she was moderately dyspneic and mildly cyanotic, but there was rapid improvement with the administration of oxygen by nasal catheter. The temperature rose to 105.2 F. for several hours after the operation but gradually returned to normal by the third postoperative day at which time she was allowed out of bed. By December 15 her blood urea nitrogen was 27 milligrams per 100 cc., and on December 18 it was 31 milligrams per 100 cc. Multiple urinary urobilinogen determinations were within normal limits, and on December 18 the total serum bilirubin was 1.2 milligrams per 100 cc. The patient was discharged from the hospital on December 24 with the only postoperative complication being severe pain over the spleen, apparently due to splenic infarction.

The spleen decreased in size by one third during the ensuing several weeks. She was examined in the Clinic on February 1, 1952, at which time she had no symptoms. The total serum bilirubin was 0.2 milligrams per 100 cc. The blood hemoglobin was 13 grams with an erythrocyte count of 4,340,000 and a white cell count of 4,500. The esophagus was x-rayed with a barium meal, and there was no evidence of esophageal varices, which was a remarkable change from a similar examination before the operation. The patient is now carrying out her ordinary household activities with apparently a satisfactory recovery from the operation.

DISCUSSION

Great care is essential in selecting patients for surgery to relieve gastrointestinal hemorrhage due to portal cirrhosis because there are factors other than portal hypertension which may be responsible for such hemorrhage. The relationship of bleeding to vitamin K deficiency and associated hypoprothrombinemia is well known. In a study of eighty patients, mostly with portal cirrhosis but some with severe liver damage due to biliary cirrhosis, 17.5 per cent had thrombocyte counts at low levels that are sometimes associated with hemorrhage.[3] It has been said that from 5 to 10 per cent of patients with portal cirrhosis have peptic ulcer, which could constitute another hemorrhagic hazard.[2] Doubtless, there are other factors influencing the hemorrhagic tendency in portal cirrhosis that are unknown.

Blakemore[4] has grouped patients in relation to indications and contraindications for portalcaval shunt operations into three groups in discussing that operation. It appears that the same type of selectivity in choosing patients for hepatic and splenic arterial ligations is useful. Group I consisted of those patients in whom ascites or a tendency to hemorrhage is based on the inability of the damaged liver to form albumin or prothrombin in adequate amounts. He advised against operation on this group. Group II cases of cirrhosis consisted of patients in whom the liver function is adequate to furnish the required amount of albumin and prothrombin but as a result of fibrotic contractions and periportal fibrosis a severe degree of portal hypertension has supervened. Operation was advised in this group. Group III consisted of cases of cirrhosis having varying degrees of depressed liver function in addition to considerable elevation of portal pressure. Surgery was recommended in this group, but the question was when because an attempt should be made to improve liver function by medical means as much as possible before operation. We believe our case belongs in Blakemore's Group II.

SUMMARY

A case of portal cirrhosis with multiple episodes of hematemesis due to esophageal varices has been reported in which a remission of the episodes has been attributed to the ligation of the hepatic and splenic arteries. Postoperative liver function studies suggested that no liver damage resulted from the procedure. Factors influencing hemorrhage associated with portal cirrhosis are discussed. A relatively short postoperative follow-up necessitates caution in predicting the ultimate prognosis in regard to further episodes of hematemesis in this patient.

Thompson, Brumm, Knepper Clinic.

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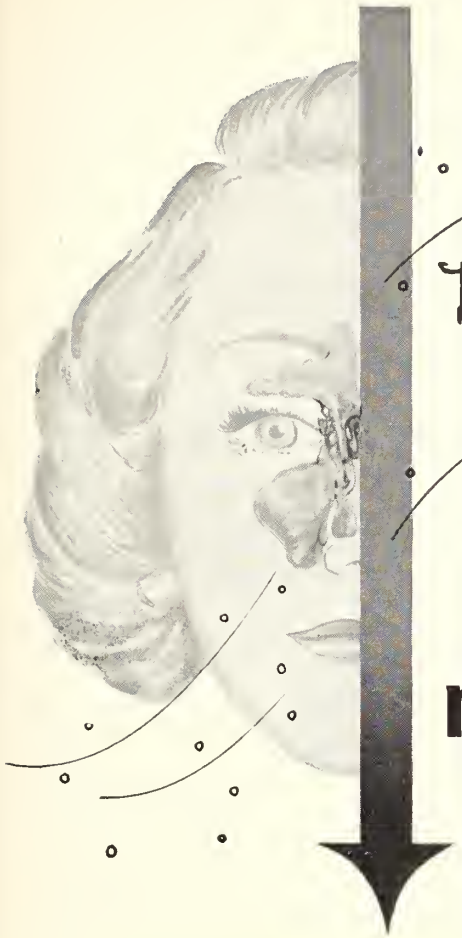
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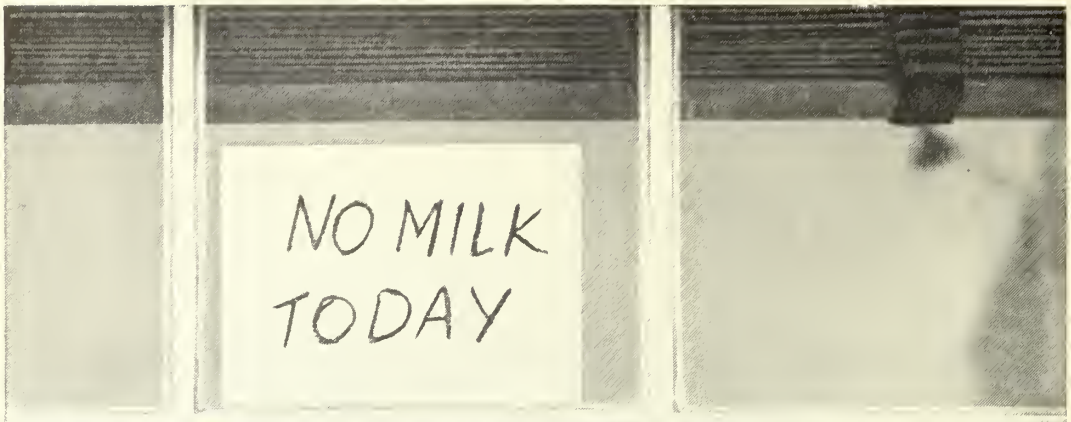
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Special Article

MANAGEMENT OF ACUTE HEAD INJURIES

HEAD INJURIES may be classified as (A) open and (B) closed. Open injuries incur the risks or (1) hemorrhage and (2) wound infection. Closed injuries involve the risks associated with (1) immediate destruction of brain tissue (contusion, laceration) and (2) progressive damage secondary to (a) cerebral compression due to intracranial hemorrhage or edema, and (b) anoxia resulting from an inadequate airway.

For clarity, the treatment of open and closed wounds will be considered separately, but it is to be emphasized that both often are seen in the same patient and require consideration jointly.

TREATMENT OF OPEN WOUNDS

The proper treatment of lacerations of the scalp consists of thorough cleansing, debridement and snug closure. As a first aid measure, a compression bandage should be applied to control bleeding. Externally protruding foreign bodies should not be manipulated. When the patient's general condition permits and adequate equipment is available, the following procedure should be undertaken.

1. Shave scalp widely about the wound.
2. Cleanse wound with soap and water and irrigate thoroughly with copious amounts of solution (saline or water).
3. Infiltrate margins of scalp wound with procaine.
4. Remove dirt and excise devitalized portion of scalp.
5. Explore skull for fracture.
6. If no fracture, close wound snugly in one or two layers with interrupted sutures of nonabsorbable material.
7. Give antitetanic serum or tetanus toxoid.

Simple lacerations may be closed in the emergency room by a single operator, but it is more satisfactory if the operator has an assistant to compress the margins of the wound to control bleeding.

Where the laceration overlies a fracture, surgical correction should be undertaken only in the operating room, for it may be necessary to remove dirt, hair or debris from the fracture line or to remove bone fragments. One should be prepared to deal with bleeding from the dura and brain.

If the brain is lacerated or foreign bodies are retained within the brain substance, all macerated brain tissue should be removed, the foreign bodies removed if possible, particularly if they are nonmetallic, all bleeding controlled and the dura and scalp closed snugly. Surgical treatment of these wounds requires experience in brain surgery and special equipment (suction, lighting, electrocoagulation). With the use of chemotherapeutic and antibiotic agents, it is permissible to defer operative closure of wounds for many hours pending improvement in the patient's general condition and analysis of his neurologic status.

Leakage of cerebrospinal fluid from the nose or ear constitutes a special problem. Any cerebrospinal fluid fistula invites the risk of meningitis. Now, with an adequate screen of antibiotic and chemotherapeutic agents, one is justified in waiting ten to twelve days pending spontaneous closure. If the leak persists longer than this, surgical closure of the fistula should be considered. Some feel that lowering of the spinal fluid pressure to 90 mm. of water by spinal drainage every twelve hours promotes spontaneous closure. Fortunately most fistulas do close spontaneously.

CLOSED WOUNDS

One of the most frequent causes of death after head injury is progressive cerebral damage due to anoxia. Many factors contribute to this:

1. The capacity of the contused brain to utilize oxygen is diminished.
2. The cerebral blood flow is reduced, even though blood pressure may be elevated.
3. The oxygen concentration of the blood is diminished as the result of a disturbed respiratory center and obstruction of the respiratory tract (tongue, mucus, pneumonitis).

The treatment in such cases is the maintenance of an adequate airway and the administration of oxygen. Patients frequently improve remarkably after clearing the airway and administering oxygen. The most satisfactory way of giving oxygen is by nasal catheter. Oxygen tents and masks interfere with attempts to keep the airway patent. Constant nursing attention, with a suction apparatus for the removal of mucus, is necessary. This may be supplemented by postural drainage (head down on face). Tracheotomy is indicated in certain cases.

The differential diagnosis between surgical and nonsurgical lesions is of primary importance in the management of acute head injuries and usually depends upon the patient's course. Hence, a carefully taken history, particularly as relates to the onset and duration of unconsciousness, and frequent and repeated neurologic examinations are necessary.

Prepared for the Committee on Trauma of the American College of Surgeons by a special committee of the Harvey Cushing Neurosurgical Society composed of Frank H. Mayfield, M.D., Cincinnati; Spencer Braden, M.D., Cleveland; Dean H. Echols, M.D., New Orleans, and Cobb Pilcher, M.D., Nashville. Submitted for publication by the Missouri Regional Committee on Trauma, American College of Surgeons.

Intracranial clot, such as extradural, subdural or intracerebral hematoma, usually is incompatible with life and requires surgical removal. Most patients with these lesions show progressive stupor, convulsions, focal paralyses and disturbance of the vital signs, such as alteration in pulse and respirations. If the patient has been conscious and then loses consciousness, an expanding intracranial lesion is probably present. The lucid interval may be prolonged (days or weeks) with subdural hematoma. If the patient has remained continuously unconscious from the moment of impact, the coma may be due in part to contusion of the brain and in part to an expanding lesion. In such instances, it may be impossible to make a differential diagnosis clinically, and cranial exploration then is necessary if the patient's condition is growing worse.

The surgical management of these lesions is not within the scope of this paper.

SPECIAL EXAMINATIONS AND TREATMENTS

X-rays.—X-rays of the skull rarely influence the course of treatment, yet the procedure of taking films involves considerable manipulation and wastes time, both of which are detrimental to the ill patient. Hence, it is advisable that x-ray examination of the skull be deferred until such time as the patient is cooperative and his condition stabilized. Attention should always be given to the possibility of injury elsewhere, particularly to the cervical spine.

Position of Patient.—The position of election is with the head elevated since this reduces venous congestion. The advantages of this position, however, are far outweighed by the disadvantage which might accrue from an obstructed airway and, if the patient's airway cannot be kept completely open with the head elevated, this position should be changed to one which best promotes an adequate airway.

Shock.—Surgical shock (peripheral vascular collapse) is rare in head injuries *per se*, but when present, the usual measures (Trendelenburg position, intravenous fluids, heat) should be employed. Shock usually indicates associated injuries and demands primary consideration.

Fluid Balance.—In an effort to reduce or limit cerebral swelling after head trauma, certain writers have advocated rigid dehydration by withholding fluids, administration of hypertonic solutions intravenously and the use of magnesium sulphate enemas. Rigid dehydration does harm rather than good to an ill patient as the other vital body functions are interfered with. From 1,500 to 2,000 cc. daily are necessary to keep the patient in fluid balance.

It is necessary in this connection to keep close watch upon the protein metabolism. Coma, stupor and prolonged confusion often result from protein depletion and can be prevented or corrected by the administration of protein hydrolysates, plasma or whole blood. If coma is prolonged, gastric feedings by nasal catheter are indicated, using a high protein diet.

Spinal Puncture.—Considerable controversy prevails concerning the indications for and the merit of spinal puncture in the diagnosis and treatment of head injuries. Some advocate daily spinal punctures as routine in the treatment of head injuries, but this is not generally accepted. We consider the indiscriminate use of spinal punctures dangerous. The following are considered proper indications for spinal puncture:

A. Diagnostic—(a) to determine pressure where intracranial clot is suspected, (b) to determine the presence and degree or both of bleeding.

B. Therapeutic—(a) to lessen intracranial pressure by withdrawing fluid as a temporary expedient pending measures that provide more lasting control of increased intracranial tension such as surgical evacuation of clot, (b) evacuation of bloody fluid when signs of meningisimus appear, usually in from four to eight days. Evacuation of fluid at this time usually relieves headache and speeds recovery.

Technic.—When indicated, a spinal puncture should be done with the patient in the lateral recumbent position, using a standard spinal puncture needle.

The operator should make the following determinations: color of the fluid, initial pressure, final pressure and the amount withdrawn.

Jugular compression tests should not be carried out unless one suspects injury to the spinal column. These tests give no information of value with reference to the brain, and the sudden rise in spinal fluid pressure which follows jugular compression may be harmful after head injury.

Spinal puncture should not be attempted if the patient is uncooperative for the information obtained is unreliable and struggling against resistance may be harmful.

Control of Restlessness.—Patients who are restless and confused constitute a difficult nursing problem and sedative medication may be necessary. Paraldehyde administered rectally or barbiturates—sodium amytal, sodium luminal—intramuscularly or intravenously are satisfactory. The latter are particularly indicated for the control of convulsions. Morphine and codeine are contraindicated because of depression of respirations, edema of the larynx and alteration of pupils (diagnostic).

Convalescence.—Early ambulation is recommended after head injury. The patient should receive physical therapy in the form of active and passive exercises early and should be gotten out of bed into a chair as soon as he is able and willing to cooperate. Prolonged bedrest is conducive to traumatic neurosis.

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Next day, Buzzy Wilson tells me he delivered Whitey's paper late because he stayed for the school dance and thought it would be OK to drop it off on his way home.

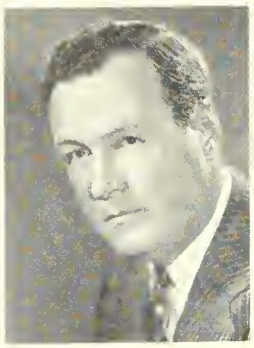
From where I sit, I can't blame Whitey for his joke. He was just reminding me we owe other people the same respect we expect from them. Since I'm always talking about the other fellow's rights—like his right to enjoy a glass of beer and his right to practice his profession without interference, it was only fair that Whitey should "wake me up" to his *right to get his copy of the* Clarion *on time.*

Joe Marsh

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PRESIDENT'S PAGE

The American Medical Asociation Educational Foundation was formed to assist the medical schools secure funds for their operations. The American Medical Association itself has contributed $1,000,000 to the Foundation, $500,000 in 1951 and $500,000 for the year 1952. Thus, a portion of the regular membership dues paid by physician members is being used to help medical schools financially. The funds turned over to the schools are entirely unrestricted and may be used in any manner whatsoever. The initial grant in 1951 amounted to $15,000 to each of the nation's seventy-nine four year medical schools and $7,500 to each of the seven two year medical schools.



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Contributions should be sent to the American Medical Association Educational Foundation, 535 North Dearborn, Chicago 10, Illinois.

J. William Thompson M.D.

Editorials

JAMES R. McVAY, M.D., BECOMES MEMBER OF BOARD OF TRUSTEES OF AMERICAN MEDICAL ASSOCIATION

James R. McVay, M.D., Kansas City, was elected a member of the Board of Trustees of the American Medical Association at the 101st annual session of the Association in Chicago June 9 to 13. Dr. McVay has been a delegate from the Missouri State Medical Association to the House of Delegates of the American Medical Association for a number of years and has served for some time as Chairman of the Council on Medical Service of the American Medical Association.

In the House of Delegates, W. L. Allee, M.D., Eldon, served on the Reference Committee on Legislation and Public Relations, and Howard B. Goodrich, M.D., Hannibal, served on the Credentials Committee.

Missouri physicians who presented papers in the Scientific Assembly were Drs. C. Rollins Hanlon, A. H. Conrad, Jr., Jerome Greenhouse, Richard S. Weiss, A. J. Reiches, Charles C. Sprague, William J. Harrington, R. D. Lange, J. P. Shapleigh, Robert E. Ryan, Philip T. Shahan, William A. Moore, Paul W. Miles, Robert H. Ramsey, H. Relton McCarroll, E. Humber Burford, St. Louis; Frank D. Dickson, Rex L. Diveley, Richard H. Kiene, Ira H. Lockwood, Kansas City.

Officers elected are: President-Elect, E. J. McCormick, M.D., Toledo, Ohio; Vice President, Leo F. Schiff, M.D., Plattsburg, N. Y.; Secretary, George F. Lull, M.D., Chicago; Treasurer, J. J. Moore, M.D., Chicago; Speaker, James R. Reuling, Bayside, N. Y.; Vice Speaker, E. V. Askey, M. D., Los Angeles; Board of Trustees, D. H. Murray, M.D., Napa, Calif., reelected, and Dr. McVay.

Paul Dudley White, M.D., Boston, was named recipient of the Distinguished Service Award of the American Medical Association for 1952.

Louis H. Bauer, M.D., Hempstead, New York, was installed as President on June 10 and delivered his inaugural address which was carried on approximately 200 radio stations in the forty-eight states. His address was a stimulating, timely report on medicine's fight to protect the public health and provide increasingly better medical care to the people. Excerpts from Dr. Bauer's address follow:

"Twenty years ago we were criticized because we dared to question some of the developing health insurance plans. What was overlooked, of course, was the fact that no criteria had been established at that time by which to assess such insurance and that little reliable information about it was then available. A year later we recommended experimentation in that field, and listed safeguards to be included in plans for the protection of patients. As a result, voluntary health insurance has become the fastest growing insurance project in history and is providing a sound means for prepayment of the major cost of illness. Yet, now we are vilified because we do support it and because we continue to oppose compulsory health insurance. . . .

"Studies of the various methods of delivering medical care are being carried on by the American Medical Association and these studies will be continued. It becomes increasingly apparent that no one method provides the answer for every area and every group of citizens. That is one of the medical professions objections to any government controlled type of medical care plan. Under such a plan the same system would be imposed on every region and every individual regardless of need or local conditions. . . ."

Pointing out that decisions are up to the people, Dr. Bauer said: "Sufficiently aroused, the American people can bring to a full stop the pellmell retreat from fundamental American principles. But they cannot do it if they don't vote. It is a shameful fact that in the last Presidential election, barely 51 per cent of the eligible voters exercised their right of suffrage. . . ."

Dr. Bauer expressed a political challenge in saying "It is the task of our two major political parties, and their leaders, to see that the people of the United States are given a government that serves, rather than a government that dominates. Next month those parties will hold their national conventions here in Chicago. The delegates to these conventions will nominate the next President of tht United States. They will write the platform upon which our governmental policy will stand during the next four years. To those delegates, I say: 'Your task is monumental. It is historic. Your burden of responsibility hardly has been matched since the days of the Constitutional convention itself. The eyes of the nation—yes, the eyes of the world—will be upon you. You will not be alone in the Convention Hall. In these days of nationwide radio and television you will have millions watching you, testing your sincerity, weighing your judgment, analyzing your motives.

" 'The platforms you write must disavow all threats to our constitutional independence and liberty. They must be bulwarks of a revitalized, positive Americanism. The men you nominate must be men of integrity—fearless men who will be guided by the highest concepts of the welfare of the nation, of the crucial need to preserve America as a haven of hope in a world that seeks peace and freedom. The party that fails to do these things will be the party of failure. A candidate who emerges from a smoke-filled room will be the candidate of defeat.' "

Approximately 14,000 physicians attended.

Organization and Economics

MUSINGS OF THE FIELD SECRETARY

One hundred ten physicians and guests attended the annual banquet of the Missouri Academy of General Practice at the Governor Hotel, Jefferson City, on May 8. Dr. M. B. Casebolt, Kansas City, retiring president, turned the gavel over to Dr. Kenneth Glover, Mount Vernon. Officers elected are: president-elect, Dr. William F. Wagenbach, St. Louis; vice president, Dr. W. W. Tillman, Springfield; secretary-treasurer, Dr. P. V. Siegel, Smithton. Dr. Robert C. McElvain, St. Louis, was presented a "Mr. General Practitioner" plaque at the banquet by Dr. William J. Shaw, Fayette, on behalf of the Missouri Academy for the unexcelled pioneering work that he has done in aiding the development of the Greater St. Louis Academy, the American Academy and the Missouri Academy of General Practice. The 1953 annual meeting of the Academy will be held in Jefferson City at the Governor Hotel.

The fourth annual meeting of the Missouri Health Council was held at the Governor Hotel, Jefferson City, on May 13, where some one hundred persons in attendance heard rural health problems discussed by Mr. Aubrey D. Gates, Field Director of the Council on Rural Health of the American Medical Association; Dr. C. E. Lively, Head of Rural Sociology, University of Missouri, and Mr. H. E. Slusher, President of the Missouri Farm Bureau Federation. Mr. Slusher pointed out that doctors are human and like the rest of us want to live where they do the best work and where their families can have opportunities comparable to other people in similar circumstances. He said that farm people need to take a look at why doctors do not care to practice in many communities.

Mr. Gates explained that many confuse the terms "medical care" and "health." Medical care, he said, is a service rendered by a physician, a service for which one pays. Health, however, is a personal and community affair which, to a great extent, is determined by knowledge and the use of that knowledge. Mr. Gates set for the following six basic factors which he feels are the undergirding of a good health program: proper nutrition, environmental sanitation, immunization, good medical care, good hospital facilities and availability of sound prepayment medical and hospital insurance plans.

Dr. Lively explained the proposed study, under the auspices of the Missouri Health Council, of the problem of medical care for the indigent of Missouri. He pointed out that there is no uniform system in this state for providing medical care to the indigent. Counties throughout the state use various methods of approaching this problem but since no evaluation has been made of the merits of these sundry methods, their comparative merits are not known. The proposed survey and study of the situation as it exists seems basic to further developments along this line. Approximately $25,000 is estimated to be needed in completing the study, one half of which amount is in sight. Efforts are being made to raise the entire amount from strictly private sources.

NEW MEMBERS

Baumhardt, Edward E., M.D., Kansas City.
Bergmann, Martin, M.D., Clayton.
Berry, Paul T., M.D., Marceline.
Bishop, Marion D., M.D., Florissant.
Chamness, James T., M.D., St. Louis.
Chatman, Eugene P., M.D., Kansas City.
Edwards, Francis L., M.D., Monett.
Engelhardt, Robert C., M.D., Poplar Bluff.
Ferguson, Donald S., M.D., Kansas City.
Fleming, Royall B., M.D., Kansas City.
Fuerste, Frederick, Jr., M.D., St. Louis.
Hatcher, Dock T., Jr., M.D., Butler.
Haynes, Robert C., M.D., Worcester, Miss.
Johnson, Ferrell H., M.D., Lebanon.
Johnson, William A., M.D., Kansas City.
Johnstone, John, Jr., M.D., St. Louis.
Kappesser, Roland C., M.D., St. Louis.
Kinsella, Edward D., M.D., St. Louis.
Kirkpatrick, Milton E., M.D., Kansas City.
Lankford, Harold D., M.D., Mexico.
McCoy, Warren R., M.D., Caruthersville.
McKaskle, Clarence W., M.D., Caruthersville.
Magness, William C., M.D., Branson.
Mahe, George A., M.D., Clayton.
Mazur, Herbert A., M.D., St. Louis.
Mickel, Arthur A., M.D., Cassville.
Miller, Perry B., M.D., St. Louis.
Nash, Helen E., M. D., St. Louis.
Netherton, George F., M.D., Cameron.
Old, Jacob W., Jr., M.D., Houston, Texas.
Ramsey, R. H., M.D., St. Louis.
Robinson, Arthur W., M.D., Kansas City.
Robinson, Donald E., M.D., Kansas City.
Ronald, Douglas C., M.D., Butler.
Schewe, Elmer J., Jr., M.D., Clayton.
Seabaugh, L. R., M.D., Cape Girardeau.
Seabaugh, William O. L., M.D., Cape Girardeau.
Shook, Lester D., M.D., Kansas City.
Stickle, A. W., M.D., St. Louis.
Taylor, Duane R., M.D., Jefferson Barracks.
Trobaugh, F. E., Jr., M.D., St. Louis.
Young, James E., M.D., Kansas City.

DEATHS

William Weiss, M.D., St. Louis, a graduate of Washington University School of Medicine, 1906; member of the St. Louis Medical Society; aged 70; died March 17.

Allen W. Gifford, M.D., Springfield, a graduate of the Central College of Physicians and Surgeons, Indianapolis, 1901; honor member and past president of the Greene County Medical Society; aged 79; died April 3.

Francis Conway, M.D., St. Louis, a graduate of the

St. Louis College of Physicians and Surgeons, 1921; member of the St. Louis Medical Society; aged 62; died April 4.

Frederick W. Scherrer, M.D., St. Louis, a graduate of St. Louis University School of Medicine, 1928; member of the St. Louis Medical Society; aged 50; died April 7.

William H. Duckworth, M.D., St. Clair, a graduate of the National University of Arts and Sciences, St. Louis, 1918; member of the Franklin County Medical Society; aged 58; died May 3.

Richard L. Sutton, Sr., M.D., McAllen, Texas, a graduate of the University Medical College of Kansas City, 1901; honor member of the Jackson County Medical Society; retired; aged 74; died May 18.

Frederick A. Jostes, M.D., St. Louis, a graduate of Washington University School of Medicine, 1920; member of the St. Louis Medical Society; aged 57, died May 19.

LEGISLATION

After the House recently turned down a bill increasing payments to old age and survivor insurance beneficiaries under the social security program, the American Medical Association was injected into the middle of a highly controversial national issue. As a matter of record, the American Medical Association has presented the following step by step story of the part it played in connection with the defeat of H. R. 7800.

"The bill was introduced on Monday, May 12, 1952, by Congressman Doughton (D., N.C.) and was referred to the House Committee on Ways and Means. Printed copies of the bill were not available until Wednesday, May 14. The committee considered the bill immediately and reported it favorably on Friday, May 16, without public hearings and with the request that action be taken on Monday, May 19, under suspension of the rules. All of this transpired in only one week's time.

"The measure came to the House floor under the suspension rule which limited debate to forty minutes, prohibited amendments and provided only for a vote on passage of the bill. A two thirds majority vote is required for passage of a bill under this rule and the vote was 149 for passage to 140 against.

"The bill would have provided a variety of amendments to Title II of the Social Security Act, as amended, which deals with Old Age and Survivors' Insurance benefits. One of the chief provisions was to increase old age and survivors' pensions by a maximum of 12½ per cent.

"The American Medical Association did not concern itself with this provision since such legislation does not fall within its province. It was concerned only with one section of the bill, Section 3. This section dealt with persons, covered by the provisions of the Old Age and Survivors' Insurance title of the Social Security Act, who became permanently and totally disabled.

"The bill further provided that the Federal Security Administrator should (a) determine what constitutes permanent and total disability; (b) establish the types of proof necessary to establish permanent and total disability; (c) provide by regulation when and where physical examinations should be taken; (d) be authorized to prescribe the examining physician or agency (including federal installations); (e) establish the fees; (f) be authorized to pay travel expenses and subsistence incident to the taking of such physical examinations, and (g) have power to curtail Old Age and Survivors' Insurance benefits because of noncompliance with regulations of this section.

"While the bill did not establish permanent and total disability benefits, it established a precedent and framework for the adoption of such benefits in the future.

"In view of this dangerous precedent and the immediate control which Section 3 of the bill would vest in the Federal Security Administrator over a large segment of the population and the medical profession, the American Medical Association strongly opposed its adoption.

"The American Medical Association did not object to the entire bill, but only to Section 3 which would certainly have put the government's foot in the door of socialized medicine. The Association informed congressmen and key medical personnel why it was voicing its opposition to the measure. In doing so, the association was performing a public service.

"In debating the bill on the House floor, Rep. Daniel A. Reed, senior Republican member of the House Ways and Means Committee, expressed the American Medical Association sentiments when he said he did not object to the increase in the benefits. Neither did the association. 'This bill,' he said, 'opens the way for socialized medicine.' Reed and several other congressmen who voiced objection on the floor of the House warned against the provision which proposed to give the Federal Security Administrator broad authority over determining disability payments. This was the very provision to which the American Medical Association objected.

"A large number of congressmen, who opposed passage, were as much against the manner in which the measure was presented as they were to the substance of the questionable section. They felt that to introduce so important a bill and 'railroad' it through committee without public hearings, and then to bring it up on the floor of the House under a suspension of the rules, was undemocratic and strictly a political maneuver to get it through. To 'slip through' such a provision would have been a violation of public trust.

"Even though the question was lost on the House floor, the bill remains alive and may be disposed of by the committee in a number of ways: (1) delete objectionable part, Section 3; (2) hold hearings and amend; (3) return it to the floor

of the House open to amendment, or (4) take no further action.

"Immediately after defeat of the bill, Rep. Reed introduced a substitute bill eliminating the controversial medical examination section and increasing permitted monthly income to $100. In reference to the Reed bill, Charles J. Kersten (R., Wis.) declared on the House floor: 'If the Fair Dealers prevent this Republican-sponsored bill from coming to the floor, they will be committing a fraud upon the aged and others who need these increases.'

"The administration has tried repeatedly to promote the passage of a compulsory health insurance bill and has failed completely. This bill, H. R. 7800, represents a last minute, desperate attempt to circumvent the will of Congress and the people by a devious legislative maneuver.

"One of many newspapers, commenting on the house action, said, editorially: 'Oscar Ewing and his socialized gang thought that, even if their sneak play was detected, the House would swallow it rather than vote against the pension increase. If the Democratic majority doesn't bring up the bill under normal procedure, without the objectional section, it will be they, not the Republicans, who are guility of denying pensioners an increase.'"

WOMAN'S AUXILIARY OFFICERS, 1952-1953

Officers of the Woman's Auxiliary to the Missouri State Medical Association for 1952-1953 follow: President, Mrs. Richard A. Sutter, St. Louis County; president-elect, Mrs. C. Alex McBurney, Slater; 1st vice president, Mrs. Norton J. Eversoll, St. Louis; 2nd vice president, Mrs. A. E. Spelman, Smithville; 3rd vice president, Mrs. James Bruce, Jefferson City; 4th vice president, Mrs. H. C. Bauman, Maryville; treasurer, Mrs. Frank Leitz, Kansas City; recording secretary, Mrs. M. E. Grimes, St. Louis; corresponding secretary, Mrs. Martyn Schattyn, Kirkwood; auditor, Mrs. W. F. Martin, Odessa; directors for one year, Mrs. Joseph Fisher, St. Joseph; Mrs. A. H. Hite, Green Ridge; Mrs. J. J. Merz, St. Louis; Mrs. J. L. Washburn, Versailles; Mrs. Howard Wilcox, Boonville; directors for two years, Mrs. T. L. Dwyer, Mexico; Mrs. Guy B. Everist, Rolla; Mrs. A. W. Hanss, Springfield; Mrs. Charles F. Kollar, Cape Girardeau; Mrs. J. Logan Mayfield, Washington.

Chairmen of standing committees follow: Archives, Mrs. C. Alex McBurney, Slater; National Bulletin, Mrs. C. V. Wilcox, St. Louis; State Quarterly Bulletin, Mrs. Charles T. Shepherd, Clayton; Circulation Manager of Bulletin, Mrs. John O'Connell, Overland; Civil Defense, Mrs. J. S. Summers, Jefferson City; Courtesy, Mrs. Armand Fries, Kirkwood; Finance, Mrs. A. J. Crider, Dixon; Legislation, Mrs. Paul Baldwin, Kennett; Medical Student Loan Fund, Mrs. J. B. McCubbin, Fulton; Nurse Recruitment, Mrs. John F. Rutledge, Crystal City; Organization, Mrs. Norton J. Eversoll, St. Louis; Parliamentarian, Mrs. R. C. Haynes, Marshall; Press and Publicity, Mrs. James Meador, St. Louis; Program, Mrs. C. B. Schoeberl, Joplin; Public Relations, Mrs. Harry C. Wall, Kansas City; Radio and Television, Mrs. Edmund S. Beckette, St. Louis; Revision, Mrs. Dwight Van Del, Kansas City; Today's Health, Mrs. J. H. Roberson, Lilbourn; Members-at-large, Mrs. E. A. Kibbe, California.

The Advisory Council is composed of Drs. Victor B. Buhler, Kansas City; E. Claude Bohrer, West Plains, and John O'Connell, Overland.

COUNCILOR DISTRICT NEWS

SECOND COUNCILOR DISTRICT

W. F. FRANCKA, HANNIBAL, COUNCILOR

Forty-nine physicians attended the evening dinner meeting of the Second Councilor District at the Merchants Hotel, Moberly, on May 28. The dinner and program were preceded by a social hour.

The evening discussions were given by J. William Thompson, M.D., St. Louis, President, Missouri State Medical Association, who spoke on "Our Relationship With Blue Cross and Blue Shield," and Dr. Eugene Bricker, M.D., St. Louis, who discussed "The Management of Varicose Veins."

The Chariton-Macon-Monroe-Randolph County Medical Society served in its usual fine fashion as host.

W. F. Francka, M.D., Councilor.

FOURTH COUNCILOR DISTRICT

JOHN O'CONNELL, OVERLAND, COUNCILOR

The Fourth Councilor District held a dinner meeting at the Southern Air, Wentzville, Thursday evening, June 5.

Twenty-five physicians were present to hear Carl Moore, M.D., St. Louis, discuss "Recent Developments in the Management of Pernicious Anemia," and J. William Thompson, M.D., St. Louis, President of the Missouri State Medical Association, present certain important considerations relative to Blue Cross and Blue Shield.

John O'Connell, M.D., Councilor.

SEVENTH COUNCILOR DISTRICT

VICTOR B. BUHLER, KANSAS CITY, COUNCILOR

"Dr. Liston Day" was celebrated in honor of Odus Liston, M.D., Oak Grove, by the Oak Grove P. T. A. and community on April 25.

C. H. Allen, M.D., Independence, was awarded a trophy of achievement by the Greater Kansas City Academy of General Practice at a dinner held on May 15.

Williston P. Bunting, M.D., and T. E. Lilly, Jr., M.D., Kansas City, appeared on a radio program on

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May 8 sponsored by the Kansas City Society for the Hard of Hearing.

Charles F. Grabske, M.D., Independence, spoke before the Republican Women Voters on May 2 on "Socialized Medicine." He spoke before the Independence Kiwanis Club on May 6 on "Diseases of the Heart."

NINTH COUNCILOR DISTRICT

J. H. SUMMERS, LEBANON, COUNCILOR

South Central Counties Medical Society

The South Central Counties Medical Society met for dinner on May 28 at the Memorial Hospital, Mountain View, with the following members and visitors present: Drs. S. W. Connor and A. C. Ames, Mountain Grove; T. J. Burns and S. G. Kramer, Houston; Leslie Randall, Licking; M. B. Perkins, Willow Springs; T. R. Skaggs, E. C. Bohrer and Rollin H. Smith, West Plains; John P. Ferguson, Springfield; Mr. Sharp, West Plains. Several of the wives attended.

Considerable time was spent before dinner looking over the recently opened hospital which would be a credit to a town much larger than Mountain View.

After dinner the ladies went to the home of Mrs. Skaggs for the evening and Dr. Connor, the president, turned the meeting over to Dr. Ferguson who discussed common gynecologic conditions and their management. It was a most profitable discussion.

The minutes of the last meeting were read and approved and a vote of thanks was given the speaker and also Dr. and Mrs. Skaggs for the hospitality.

The meeting adjourned to meet in West Plains on June 25.

A. C. AMES, M.D., Secretary.

MISSOURI STATE MEDICAL ASSOCIATION

Ninety-Fourth Annual Session
Hotel Jefferson, St. Louis
March 30, 31, April 1, 2, 1952

MINUTES OF THE HOUSE OF DELEGATES

Sunday Session

The first meeting of the House of Delegates of the Ninety-fourth Annual Session of the Missouri State Medical Association was called to order at 2:00 p.m., March 30, in the Crystal Room, Hotel Jefferson, St. Louis, with F. T. H'Doubler, M.D., Springfield, Speaker, presiding.

Officers, Councilors and Delegates present during the Annual Session follow:

Officers

President	C. Edgar Virden, Kansas City
President-Elect	J. W. Thompson, St. Louis
Secretary	H. E. Petersen, St. Joseph
Treasurer	C. E. Hyndman, St. Louis
Editor	R. O. Muether, St. Louis
Vice-President	Otto W. Koch, Clayton
Vice-President	A. P. Rowlette, Moberly
Vice-President	Rollin H. Smith, West Plains

Councilors

1st District	Donald M. Dowell, Chillicothe
2nd District	W. F. Francka, Hannibal
3rd District	Armand D. Fries, St. Louis
4th District	John O'Connell, Overland
5th District	J. F. Jolley, Mexico
6th District	R. W. Kennedy, Marshall
7th District	Victor B. Buhler, Kansas City
8th District	W. S. Sewell, Springfield
9th District	E. C. Bohrer, West Plains
10th District	F. W. Hall, Cape Girardeau

Delegates
First District

Buchanan	H. W. Carle, St. Joseph
Buchanan	Joseph L. Fisher, St. Joseph
Buchanan	L. Paul Forgrave, St. Joseph
Clay	Earl Knox, North Kansas City
Grand River Med. Soc.	
Caldwell	Frank R. Daley, Hamilton
Carroll	John Platz, Carrollton
Grundy	E. J. Mairs, Trenton
Daviess	F. K. Wilson, Winston
Harrison	M. Gearhart, Bethany
Linn	John R. Dixon, Brookfield
Mercer	A. S. Bristow, Princeton
Nodaway-Atchison-Gentry-Worth	E. D. Imes, Maryville

Second District

Chariton-Macon-Monroe-Randolph	G. W. Hawkins, Salisbury
Chariton-Macon-Monroe-Randolph	F. A. Barnett, Paris
Chariton-Macon-Monroe-Randolph	Clarence C. Cohrs, Moberly
Marion-Ralls	B. L. Murphy, Hannibal
North Central	S. L. Freeman, Kirksville
Pike	John Hooker, Clarksville.

Third District

St. Louis City	Henry C. Allen, St. Louis
St. Louis City	Emil A. Burst, St. Louis
St. Louis City	Arthur R. Dalton, St. Louis
St. Louis City	Charles R. Doyle, St. Louis
St. Louis City	Joseph C. Edwards, St. Louis
St. Louis City	Edwin C. Ernst, St. Louis
St. Louis City	Edwin C. Funsch, St. Louis
St. Louis City	S. F. Hampton, St. Louis
St. Louis City	David N. Kerr, St. Louis
St. Louis City	Louis H. Kohler, St. Louis
St. Louis City	Bernard T. Koon, St. Louis
St. Louis City	Curtis H. Lohr, St. Louis
St. Louis City	W. A. McGuire, St. Louis
St. Louis City	Paul F. Max, St. Louis
St. Louis City	Sam J. Merenda, St. Louis
St. Louis City	Curtis H. Meyer, St. Louis
St. Louis City	R. O. Muether, St. Louis
St. Louis City	John F. Patton, St. Louis
St. Louis City	Joseph C. Peden, St. Louis
St. Louis City	D. A. Ries, St. Louis
St. Louis City	L. R. Sante, St. Louis
St. Louis City	Victor E. Scherman, St. Louis
St. Louis City	Jerome I. Simon, St. Louis
St. Louis City	Wendell G. Scott, St. Louis
St. Louis City	J. E. Von Kaenel, St. Louis
St. Louis City	Leon F. Weyerich, St. Louis
St. Louis City	Robert D. Woolsey, St. Louis

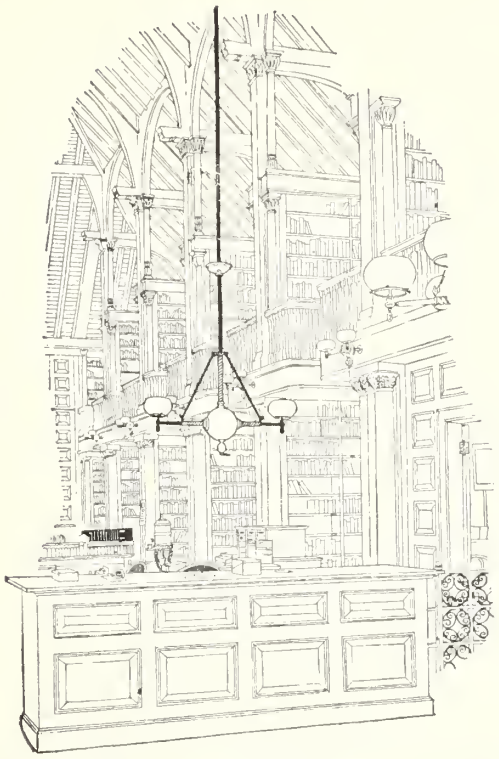
Fourth District

Franklin-Gasconade-Warren	Frank G. Mays, Washington
Franklin-Gasconade-Warren	C. T. Shaw, Hermann



1. C. Edgar Virden, M. C., Kansas City, presents gavel to J. William Thompson, M.D., St. Louis. 2. Louis H. Bauer, M.D., Hempstead, presents the address of the evening. 3. Dr. Thompson presents the Past President's key and a volume of The Journal to Dr. Virden. 4. and 6. Officers of the Association were seated at the speakers' table. 5. Dr. Virden presents 50 Year Pins to 50 year men who were present at the banquet. 7. Mrs. W. C. Cheek, Springfield, presents a government bond to the essay contest winner. 8. An orchestra played while the banquet was served. 9. Several Past Presidents talk with Dr. Bauer.

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Lincoln.....E. O. Damron, Elsberry
St. Charles.....E. J. Canty, St. Charles
St. Louis County.....E. R. Brown, University City
St. Louis County.....C. P. Dyer, Webster Groves
St. Louis County.....O. P. Hampton, Jr., University City
St. Louis County.....Carl Irick, Webster Groves
St. Louis County.....Julius Jensen, St. Louis
St. Louis County.....Martyn Schattyn, St. Louis

Fifth District

Audrain.....T. L. Dwyer, Mexico
Boone.....A. R. McComas, Sturgeon
Boone.....J. W. Allee, Columbia
Callaway.....Patricia F. Lanier, Fulton
Cole.....J. W. McHaney, Jefferson City
Cooper.....B. M. Stuart, Boonville
Howard.....W. A. Bloom, Fayette
Miller.....W. L. Allee, Eldon
Moniteau.....Edgar A. Kibbe, California
Morgan.....J. L. Washburn, Versailles

Sixth District

Benton.....David H. Glenn, Warsaw
Johnson.....C. M. Lederer, Warrensburg
Lafayette-Ray.....W. E. Martin, Odessa
Lafayette-Ray.....M. L. Masterson, Richmond
Pettis.....C. G. Stauffacher, Sedalia
Saline.....G. A. Aiken, Marshall
Vernon-Cedar.....C. B. Davis, Nevada
Vernon-Cedar.....John H. Hill, Eldorado Springs

Seventh District

Jackson.....Maxwell G. Berry, Kansas City
Jackson.....F. B. Campbell, Kansas City
Jackson.....W. B. Cheesman, Kansas City
Jackson.....Ralph R. Coffey, Kansas City
Jackson.....Ralph E. Duncan, Kansas City
Jackson.....Max Goldman, Kansas City
Jackson.....W. Wallace Greene, Kansas City
Jackson.....John A. Growdon, Kansas City
Jackson.....G. V. Herrman, Kansas City
Jackson.....R. Lee Hoffmann, Kansas City
Jackson.....John S. Knight, Kansas City
Jackson.....John H. Mayer, Jr., Kansas City
Jackson.....W. C. Schaerrer, Kansas City
Jackson.....Vincent T. Williams, Kansas City

Eighth District

Barton-Dade.....Vern T. Bickel, Lamar
Dallas-Hickory-Polk....Doyle C. McCraw, Bolivar
Dallas-Hickory-Polk....G. C. Plummer, Buffalo
Greene.....F. T. H'Doubler, Springfield
Greene.....Durward G. Hall, Springfield
Greene.....W. W. Tillman, Springfield
Jasper.....W. T. McNew, Carthage
Jasper.....G. A. Schulte, Joplin
Ozarks.....A. A. Mickel, Cassville
Ozarks.....Kenneth Glover, Mount Vernon
Ozarks.....F. L. Wommack, Crane
Ozarks.....J. M. Threadgill, Forsyth
Webster.....E. G. Beers, Seymour

Ninth District

Carter-Shannon.....T. W. Cotton, Van Buren
Laclede.....J. H. Summers, Lebanon
Phelps-Crawford-Dent-Pulaski.....R. E. Breuer, Newburg
Phelps-Crawford-Dent-Pulaski.....F. L. Kozal, Salem
South Central.....T. J. Burns, Houston
South Central.....C. W. Cooper, Thayer
South Central.....R. W. Denney, Mountain Grove
South Central.....Rollin H. Smith, West Plains

Tenth District

Butler.....W. E. Henrickson, Poplar Bluff
Cape Girardeau.....E. D. Campbell, Cape Girardeau
Dunklin.....Paul Baldwin, Kennett
Mineral Area.....Ben M. Bull, Ironton
Pemiscot.....O. W. Cook, Caruthersville
Perry.....J. J. Bredall, Perryville
SEMO.....W. O. Finney, Chaffee
SEMO.....John J. Killion, Portageville

Speaker: Members of the House of Delegates, will you please come to order and will you stand while Father Edward T. Foote, S. J., Regent, St. Louis University School of Medicine, St. Louis, delivers the invocation?

Father Edward T. Foote, S. J., St. Louis: Our Heavenly Father whose power at this moment supports us and all we do. Eternal Physician who has wonderfully disposed that men's minds may grasp new secrets of Thy universe and Thy sciences and so apply this knowledge for the betterment of their fellowmen as physicians; our God of Love accepting as done to Thee what we do for each other, it is our affair today that these days of association and meeting and deliberation may not only advance the knowledge and understanding and renew the friendships of these fellow physicians, but especially that through them and others like them, all that is of good may be preserved in their privileged calling. May they be among those very important ones who shall preserve the values of the individual man and his dignity before God and his fellows and so not only preserve life and health but what is dearest to our own America.

Emil A. Burst, M.D., St. Louis, reported for the Committee on Credentials.

Frank G. Mays, M.D., Washington, asked for the floor for a question of privilege. It being granted, he asked that the House of Delegates approve the changing of Gasconade County from the Fifth Councilor District to the Fourth Councilor District and the hyphenation of Gasconade, Warren and Franklin counties as one society, this having been approved by the Council. Upon approval of the House of Delegates that this be done, delegates from Gasconade and Warren counties were approved by the Committee on Credentials, these having been unorganized counties.

Speaker: The next order of business is the roll call. Mr. O'Brien, will you call the roll?

Mr. T. R. O'Brien read the roll of delegates and alternates, which showed a quorum present.

Speaker: The next order of business is the reading of the minutes of the previous meeting. They were published in the July 1951 issue of The Journal. What is your pleasure?

Upon motion, duly seconded, the minutes were approved as published.

Victor E. Scherman, M.D., St. Louis, Vice Speaker, presiding, the Speaker spoke as follows:

For the last six years my County Society has been told that it had to re-elect me as delegate to the Missouri State Medical Association—each of the first three years because I had been each time elected Vice Speaker of the House of Delegates, and each of the last three years because I had been elected each time Speaker of the House and, in all cases, because I had to be returned as a delegate in order to be seated. During these six years there have been many additions

to our County Society's membership. We have acquired a goodly number of well trained and seasoned, and yet young, men of exceptional caliber. I am sure that the Society will welcome its voting emancipation after this present session, and I want to add that the experience of being Speaker has been a pleasure and an honor, indeed.

During a Speaker's first year he is learning his way. Dr. Ralph Duncan, my predecessor, was so kind as to offer me aid and advice. Nevertheless, the situation in the first year of Speakership is strange. During the second year—when one thinks that things are pretty well in hand—it turns out that a lot of things are not well provided for. The purpose of these remarks is to record experience for the benefit of those who follow.

In general, a Speaker should be familiar with parliamentary procedure—much more so than the casual member. For this reason it is well to study parliamentary rules daily for two months before the meeting—perhaps reading one's self to sleep each night going over this dry subject. This gets one beyond the confused stage and onto a more firm footing. There is no reason to keep the information so gained in mind during the year, so it is promptly forgotten after each meeting, to be taken up again in due time before the next meeting.

I shall never forget the advice of Dr. Bob Schluetter, "Take it easy and don't take sides." It is, indeed, important that the Speaker refrain from taking sides in controversies, regardless of his opinions or the involvement of his personal friends. Another duty is to facilitate the making of progress, by avoiding and steering clear of bottlenecks, snags, deadlocks, and so forth.

With reference to the duties of the Speaker of the House of Delegates of the Missouri State Medical Association, I have the following in particular to say:

1. Keep abreast of the problems confronting the Association—particularly as revealed by the Councilor District meetings.

2. A few weeks before the Annual Meeting go over the list of reported delegates and select on a geographic and democratic basis committees that are conprised of capable men that one knows will work well as committee men. The naming of committees should not be a last minute affair. It requires thinking out.

3. When the committees are announced, make known where and when each committee will hold forth and personally see to it that these facts are properly posted and advertised so that the committees are accessible to all. Secretarial assistance should be provided for the committees. All members having evidence, arguments or pros and cons should feel enjoined to appear before these reference committees at the appointed time and place to democratically argue their causes. These committees are the deliberative and working bodies of our Association's all important House of Delegates.

Again, I wish to express my appreciation to you for having conferred on me the honor of being your Speaker, and my pleasure in working with a so genial and capable a Vice Speaker, Dr. Vic Sherman.

The Speaker appointed the following Reference Committees:

Reference Committee on Resolutions

Durward G. Hall, Springfield, Chairman.
Vincent T. Williams, Kansas City.
Curtis H. Lohr, St. Louis.

Reference Committee on Amendments to Constitution and By-Laws

Joseph L. Fisher, St. Joseph, Chairman.
Henry Allen, St. Louis.
R. Lee Hoffmann, Kansas City.

Reference Committee on Miscellaneous Affairs

W. O. Finney, Chaffee, Chairman.
T. L. Dwyer, Mexico.
Kenneth Glover, Mount Vernon.
Charles R. Doyle, St. Louis.

Reference Committee on Medical Education

M. Gearhart, Bethany, Chairman.
Rollin H. Smith, West Plains.
C. G. Stauffacher, Sedalia.
T. J. Burns, Houston.

Reference Committee on Reports of Officers

Paul Baldwin, Kennett, Chairman.
R. E. Breuer, St. James.
W. A. Bloom, Fayette.

Reference Committee on Technical Exhibits

W. W. Tillman, Springfield, Chairman.
E. D. Campbell, Cape Girardeau.
P. W. Jennings, Canton.
E. J. Canty, St. Charles.

Reference Committee on Scientific Exhibits

Patricia Lanier, Fulton, Chairman.
Julius Jensen, St. Louis.
B. L. Murphy, Hannibal.
Ralph R. Coffey, Kansas City.

The Speaker announced the time and place of Reference Committee meetings.

C. Edgar Virden, M.D., Kansas City, gave the President's Message as follows:

President's Message

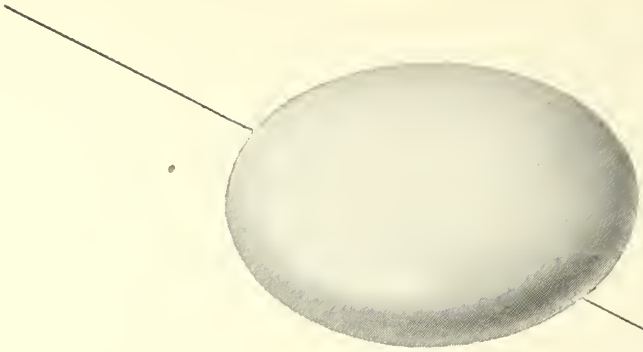
Mr. Speaker, Members of the House of Delegates: There is always something discouraging about coming to the end of a term of office. In starting out one sets his sights high to aim at great accomplishments for the year ahead. In the beginning it seems as though a year were a long time indeed—time enough certainly for major and definite accomplishments.

As the months go by, however, and the complexities of the job multiply and as one comes up against the delays and frustrations that seem an inevitable part of democratic procedures, little by little the bright hope for extraordinary achievement fails and by degrees all attention is concentrated on the more modest goal of avoiding failure.

I find myself before you today in a mood quite different from that with which I began my presidency a year ago. In the intervening months I have been in the arena—as a contemporary English playwright puts it—"close to the blood, sand and the warm smells of combat." I have learned how difficult of accomplishment are many of the tasks we have set for ourselves. I have learned how easy it is to become discouraged, to suffer frustration and, above all, to get very, very tired.

At the same time I believe I have discovered something positive and something very valuable in my months of service as your President. I have learned first hand a great many things about the working out of policies in a democracy. I have learned how slow and, at the same time, how splendid are the processes by which we progress. If the steps in these processes sometime seem discouraging and difficult, nevertheless they are also little by little, steadily and surely tending toward the best solution of democratic problems in a democratic way.

There have been times in the last year when I could cheerfully have wished to have something like absolute authority over the doctors of the state of Missouri, the



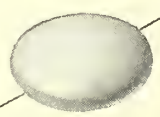
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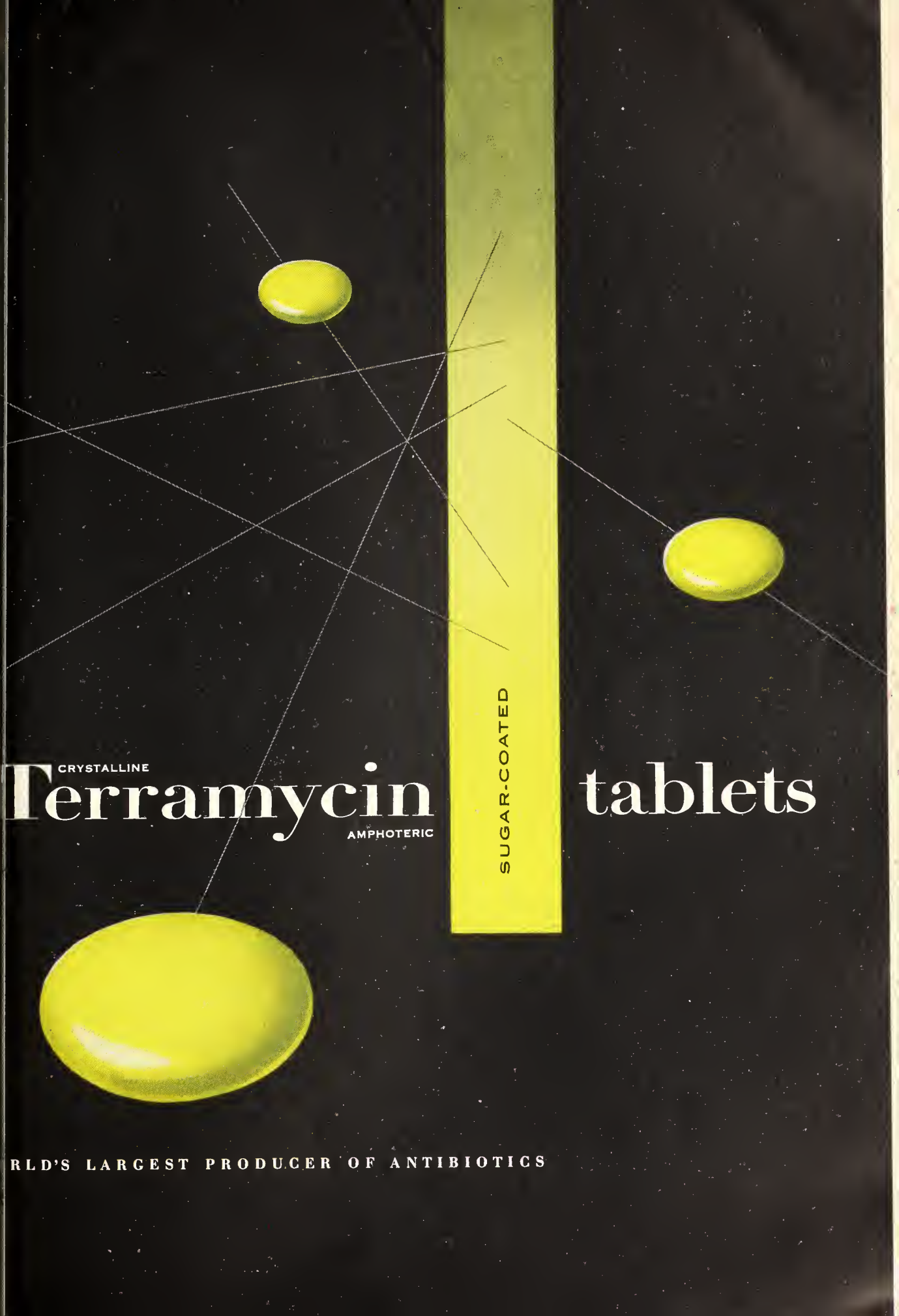
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legislators, the newspapers, the people in general, and the University Board of Curators in particular. There have been times, as I say, when it seemed to me that the exercise of such authority would have made for a simple, clear-cut and correct solution of our problems—a solution that would be best for all the people of Missouri. To put it briefly, I got an inkling into what I suspect must have been the common motives of Alexander, Caesar, Genghis Khan and Hitler. How fine it would have been to have pushed through with irresistible power to solutions that we all know are right.

At the same time, however, I came to see more clearly how extremely valuable and healthy are the human qualities of forbearance, effort, tolerance and patience that our institutions foster. I have come to see how complex a business democracy is in its slow balancing of conflicting ideas and interests, in its careful maintenance of the community, in its final trial and error method of achieving solutions acceptable to all.

In preparing my brief remarks for today, I read through the talk I made to this House of Delegates a year ago. It seemed to me my final paragraph on that occasion had a prophetic ring. At that time I said that "I hope that the end of this ensuing year will see some real accomplishment, but I have lived far too long not to expect that there will be some disappointments."

As I appear before you now to make my final accounting as your President, I believe that sentence pretty well sums up the state of things after another year of effort. There have been some accomplishments; there have been some disappointments. The net result, however, has been, in the overall, a sure and steady step forward toward our goal of more effective health service for the people of Missouri and toward an Association more dedicated to this high achievement.

First, may I speak briefly on some of the net accomplishments of the year.

You have all received the booklet containing the reports of officers and committees. In these closely printed eighty pages you will find, as it seems to me, an account of volunteer work in the service of the people of Missouri of which we can all be proud. It would be unbearably long if I endeavored to summarize point by point the achievements that have grown out of this work. For the most part they are undramatic; they are not the sort of things that make headlines, but they are in every instance, I believe, the short, sure steps which, as I have noted, in a democracy lead us toward a better state of things and which are worthy of the long record of our profession in making Americans and Missourians ever better cared for in all that relates to health.

I wish to express to every officer of the Association and to every committee chairman and member my thanks for his contribution to the work of the year. These time consuming labors have made the record of continuing achievement of which I am, at this moment, very proud. They have also been a major total service to the people of our state.

There are one or two points in particular which relate to major policies of our Association on which I should like to comment briefly.

In the field of postgraduate education for doctors, we have continued to make great strides. A long series of meetings were held throughout the state, and I think it fair to say that our work in this field is such as to guarantee to every doctor and his patients a fine opportunity for the prompt and correct application of new technics and knowledge in better health care.

I wish also to refer specifically to progress made in the field of rural medical service. The year saw the start of construction of two additional county hospitals and the launching of an expansion program for a third. The Association continued its efforts to provide a better distribution of doctors throughout the state. In this task Missouri has an enviable record and since the war impressive progress has been made toward our goal of correcting this maldistribution of medical service.

Similarly, in the area of medical economics, the year has seen continued progress in voluntary prepayment health insurance, both in the programs sponsored by our profession and those of commercial companies.

The year has seen an encouraging step forward in the participation of our Association with lay and government groups in the fostering of community action to provide better health facilities and better public health service. I wish formally to extend my thanks to Dr. Buford Hamilton and his staff for the splendid way in which the State Division of Health has cooperated with the Association throughout the year to achieve our common goals.

So much for the credit side of the ledger. Let us turn briefly to the disappointments.

In general, I think we must recognize that there is very much to do in Missouri and that the last year has not seen the overall progress we might have hoped for. This fact does not discourage me because I believe it necessary always to set our hopes somewhat high to allow for an inevitable falling short in achievement.

This relative disappointment needs to be accepted not as a check or a setback, but rather as a new stimulus to greater effort. For example, I believe such greater effort is indicated in our support of our voluntary health insurance programs. We still have a long way to go before we may be satisfied with the enrollment in these plans and with the completeness of the protection which they offer.

I believe we have all been disappointed that the last year did not see a final settlement of the Audrain Hospital suit with a court determination that would establish qualifications for the practice of medicine and surgery in the state of Missouri and that would clearly define the nature of osteopathy. As you know, the Supreme Court of Missouri refused to accept jurisdiction in this matter, and it is pending at the present time before the St. Louis Court of Appeals, where a hearing is expected in early May.

Finally, I believe we have all been disappointed with the way in which the University of Missouri medical school issue has developed in the year. As you know, this House of Delegates last year adopted a resolution commending the Board of Curators of the University for their intention to establish the school and calling on them to give consideration to the very important facts which have led the Missouri State Medical Association to advocate emphatically establishment of the school in a metropolitan area.

I shall not at this time endeavor to review those facts, but we are all aware of their importance and are equally aware that this House of Delegates has formally declared its view that a University of Missouri medical school is likely to succeed only in a metropolitan area.

At the same time, our Association has made it clear that we recognize the jurisdiction and authority of the University Board of Curators in this matter, and we have scrupulously pursued a course that reflects this recognition. Although irresponsible charges have been leveled against the Association alleging that the doctors of Missouri are prepared to kill the school rather than to permit its establishment in Columbia, and though the public press has carried this rule or ruin charge against us, the fact is that we have limited our efforts in the matter to a vigorous and thoroughly justified presentation of our views to the Board of Curators. We have not engaged in a public fight against the Board. We have not lobbied against the Board. We have done precisely what we said we would

do. We have advocated the best solution of the matter as we see it, and we shall continue to advocate that solution to the very end.

At the present time, as you know, this issue is still unresolved, and it is not possible to know whether the appropriation sought by the Curators will or will not be available to them. In either case the course for the Association is clear. We shall again publicly take to the Board of Curators the very serious and fundamental considerations which lead us to the certain conviction that a medical school in a small university town cannot succeed as the people of Missouri have a right to expect.

This, then, completes my review of the year's progress and lack of progress. In some areas we have gone forward. In some we stand substantially as we did a year ago. In the overall the record is one in which I take satisfaction and one of which I believe the medical profession of Missouri and this House of Delegates may be proud. Thank you.

J. WILLIAM THOMPSON, M.D., St. Louis, gave the Recommendations of the President-Elect as follows:

Recommendations of the President-Elect

Mr. Speaker, Members of the House of Delegates of the Missouri State Medical Association: Among the rewarding consequences of election to the presidency of an organization like ours is the necessity to stand off for a while from the day's routine in order to map out a program for the year ahead. It is rewarding because this look ahead involves a long look back—which inevitably leads a physician to a reexamination of his profession and its relation to the community and society as a whole.

That reappraisal is a heartening one, despite the doubts and apprehensions of these troubled times, for it brings into sharp relief anew that conception of the physician as the guardian of the ancient code of service to humanity, as the friendly advisor to the individual and the family in illness and in health. Although that idea does not square with foreign ideologies that have infiltrated the American political picture, it is one that is at the core of the freedom of the medical profession as we know it.

One method of assuring continuance of that concept is the vigorous support by all of us of the policies of the American Medical Association, which is dedicated to the preservation of the traditional relationship of physician and patient and the defeat of socialized medicine.

It was the American Medical Association that undertook on a national scale an educational and public relations program to alert both doctor and layman to the threat of governmental control of the practice of medicine. This program, involving as it did the combating of the vast propaganda resources of the advocates of socialized medicine, required financing through dues paid in by the nation's doctors. It has been successful so far. Continued success demands the continued teamwork of all physicians and, that, to a very great extent, means their maintenance of the payment of dues.

Another counterattack has been conducted by the national association against a move for federal encroachment in the field of medical education. Legislation for direct governmental subsidization in the operation of medical schools, nearly all of which are acutely in need of funds, has been pending in Congress. The American Medical Association's move in opposition has been the creation of the American Medical Education Foundation, which together with an industrially sponsored foundation, contributed more than $1,000,000 to the operating funds of the nation's medical schools in 1951. The American Medical Education Foundation deserves the support of every Missouri doctor. Contributions to the fund (which are tax deductible) may be earmarked by the donor for the school of his choice. All such contributions in no way affect the amounts given directly to the schools by the foundation.

At the outset of this talk I touched briefly on the time honored concept of the doctor's relationship to society. I also mentioned some apprehensions born of the times. Having as I do strong personal feelings on this score, I want to make some observations as just one medical practitioner.

It seems clear to me that there is a strong link between the physician as he has practiced for centuries, the family group and the continued existence of a society of free men. It is the family that is the basic element of liberty, not—as some would have us feel in this age of huge corporations and giant labor organizations—the factory, or the union, or the government welfare agency. It is for that reason I am gravely concerned about the possibility of the twisting of the medical profession into a function of some corporate body, some labor organization or some federal agency.

While it is perhaps inevitable in our complex society that some changes in the form of medical practice will occur, we must guard against any basic alteration in the traditional personal relationship between physician and patient, each with freedom to choose the other. The physician should continue to serve the health interests of the entire community of the United States on the basis of liberty and equality for all people. He should oppose any special interests—be they industry, labor or government—securing for themselves special or extraordinary health privileges that the entire citizenship must pay for, in increased commodity costs or higher taxes.

Governmental policies will determine the outcome of this issue that I consider an inextricable element of our free way of life. It seems almost unnecessary to point out that increased participation in the processes of government must be the goal of us who abhor any trend toward state, corporate or collective control of the practice of medicine. I consider it the duty of every Missouri doctor to register and to vote in elections on the local, state and national levels, and to see that qualified members of his family do the same.

I wonder whether all of us have been doing our utmost to support certain programs, which have been in existence for years, that affirmatively present the physician-patient point of view I have been stressing. Voluntary health prepayment plans—Blue Cross, Blue Shield and the programs of private insurance companies—are all based on the principle we believe in, the patient's right to go to the doctor and the hospital of his own choice. I hope some of us over the years have not become passive in their behalf. I urge that we all actively explain to our patients the merits and workings of these plans, designed to give to most families protection against the financial impact of illness. At the same time, I urge the Blue Shield and Blue Cross organizations to continue actively seeking in every way possible to enlarge their scope in order to allow individuals, and not just groups, to become subscribers to the plans. This plea is, of course, qualified by the realization that a sound actuarial basis must first be found for such an extension. It is also made in full understanding of the complexities and economic factors involved.

High among the recommendations for your Association plans in the year ahead is one for continued cooperation with the state and local public health programs. Important here is the need for physicians to get behind community health councils, in order to aid public health officers and public spirited citizens in attempting to solve such public health problems as sewage disposal, water supply and milk supervision.

In the field of public health, significant progress has been made in the construction of new or additional

hospital facilities in rural areas greatly in need of those facilities and medical service. Perryville, Hayti, Rolla, Springfield, Kennett, Troy, Nevada, Mexico and Milan are among some of the strategic locations in which such construction has been completed or is underway. They are examples of the good use to which federal funds under the Hill-Burton Act have been put to supplement local funds. It is well to remember that the planning for these projects has been conducted at the local level. And there have been communities like Bonne Terre, Lamar and Fairfax that have gone ahead solely with local or private funds.

Among the vital considerations in the planning of those hospitals has been the goal of attracting doctors to the areas by providing them with badly needed hospital facilities. It has been a fundamental Missouri State Medical Association belief that the best way to get young doctors to take up practice in the rural areas is to provide them with modern hospital facilities close by.

Closely connected with the question of rural medical service and facilities is the question of the University of Missouri four year medical school. Our position on the location of this school has been clearly stated. It is based on the obvious advantages offered by a metropolitan area—clinical facilities, availability of a teaching faculty, lower initial construction costs and continuously lower operating costs.

It has been our further position—and this I want to emphasize—that the Association recognizes the authority of the University's Board of Curators to establish the school and that while we will still attempt to convince the Curators of the soundness of our point of view, we will cooperate in every way possible to make the school a success if it should be finally established at Columbia.

But I cannot refrain—before leaving the medical school topic—from expressing my eternal perplexity over why those who must decide this issue do not follow the judgment and advice of an Association representing the majority opinion of the medical profession in Missouri. Adding to this state of mind is the fact that the one doctor who is a member of the Board of Curators, Glenn W. Hendren, strongly favored the metropolitan location for the medical school, but his recommendation was rejected by a majority of the Board, as were the clear facts of the report of Dr. Harold S. Diehl, who was retained by the Curators as an expert to advise them on this technical matter.

Now, as I approach the end of this talk, I want to stress what I believe is one of my most important—if undramatic—recommendations. This is that the functions of the Missouri State Medical Association office and staff be continued on the present basis—a basis of proven worth to the medical profession and the public.

It seems well to comment briefly on a few of those functions. A vital one is the overall aspect of the office as a public relations unit educating the public on Association policies and on health matters in general. For the busy medical practitioner, there is a postgraduate education program sponsored by the Association to help him keep abreast of developments in modern medicine. Last year, for example, more than ninety speakers were supplied to county medical meetings throughout the state. Another job is correlating with other interested groups the significant phases of health problems. Operating very well in this field is the Missouri Health Council, created several years ago by the Missouri State Medical Association and the Missouri Farm Bureau Federation to provide a public forum for discussion of health problems throughout the state. The Association Field Secretary is busy traveling around Missouri helping county societies with their meetings and programs. He is constantly working to get doctors to locate in rural areas—and, to take a look at the record, some 475 physicians have started up practice in those districts in a little over six years. The well edited Journal of the Association is of interest and edification to all of us. And it is only through the Association office staff that we are kept fully informed of legislation in Jefferson City and in the local communities.

This, then, is my outline to you of some of the objectives as I see them for the year ahead. True, it also includes some looking backwards and some personal philosophy. But at the very beginning of my remarks I said it had been a rewarding thing to have to take time to reexamine our profession—seeing anew its concept as one dedicated to the service of humanity and as an element in a free civilization. If the time you have had to spend listening to me has given you anything at all of that same experience, I have had a further and even greater reward.

The Speaker was authorized to refer all reports to the appropriate Reference Committee, upon motion duly seconded.

The report of the Secretary, H. E. Petersen, M.D., St. Joseph, follows:

REPORT OF THE SECRETARY

On December 31, 1951, the official membership of the Association was 3,546.

STATUS OF MEMBERSHIP

Number of Members, January 1, 1951	3,548
New Members	173
Reinstated	6
Total	3,727
Dropped	43
Deceased	77
Transferred	61
Total	3,546

The Committee on Nominations, which is appointed by the President from the House of Delegates, must submit nominations for the following offices:

Three Vice Presidents to fill the vacancies created by the expiration of the terms of Otto W. Koch, M.D., Clayton; A. P. Rowlette, M.D., Moberly; Rollin H. Smith, M.D., West Plains.

Two Delegates and corresponding Alternates to the American Medical Association to fill the vacancies created by the expiration on December 31, 1952, of the terms of W. L. Allee, M.D., Eldon; Alternate, Paul Baldwin, M.D., Kennett; Howard B. Goodrich, M.D., Hannibal; Alternate, Vincent T. Williams, M.D., Kansas City.

The terms (two years) of the Councilors of the odd numbered districts expire this year: D. M. Dowell, M.D., Chillicothe, First District; A. D. Fries, M.D., St. Louis, Third District; J. F. Jolley, M.D., Mexico, Fifth District; V. B. Buhler, M.D., Kansas City, Seventh District; E. C. Bohrer, M.D., West Plains, Ninth District. Delegates from these Districts shall meet on the last day and elect the Councilor for their District. The election shall be certified to the House of Delegates on a prescribed form which will be furnished. Lists of Delegates from the various districts will be available to the Councilors at the Registration Desk.

The session will convene for four days, beginning Sunday, March 30, at 2:00 p. m., with a session of the House of Delegates, and closing Wednesday afternoon, April 2. A session of the House of Delegates will be held Monday, March 31, at 4:00 p. m., and the final session of the House will convene at 1:30 p. m., on April 2. The Annual Banquet in Honor of Past Presidents will take place on Tuesday evening, April 1, at 7:30 p. m. at Hotel Jefferson.

There will be a dinner for Presidents, Secretaries and Editors of County Societies on Sunday, March 30, at 6:00 p. m.

H. E. PETERSON, Secretary.

The report of the Executive Secretary, Mr. T. R. O'Brien follows:

REPORT OF THE EXECUTIVE SECRETARY

The reports of the Council and Committees of the Association outline in detail the many activities of the Association. There is no need to elaborate upon them except to say that the Field Secretary or I, or both of us, attend these meetings and try to carry out the duties outlined. The preparation of agenda, reports and background information represents a major function of staff activities.

Efforts of the many committees are primarily directed toward improving the general public health of the people of the state. The purposes of the Association, as defined in its Constitution, are to promote the science and art of medicine, the protection of public health and the betterment of the medical profession. Surely, programs designed for education of physicians, the publication of scientific articles in THE JOURNAL, attempts to locate physicians in rural areas, cooperation with the State Division of Health in educational and other activities are all efforts to carry out the basic purposes of the Association. It may seem at times that more emphasis is placed upon the activities of one committee rather than another, and yet, basically, all are equally important in the overall effort to bring to the people the best medical care possible.

Attention is called to the many excellent scientific and technical exhibits which will be shown. These exhibits bring information about the latest advances in medicine and surgery. Intermission periods are provided so that you may visit these exhibits. The revenue received from the sale of technical exhibit space helps the Association in its efforts to present better scientific programs.

I wish to thank the Officers, Committee Members and others who have had a hand in guiding the activities of the Association and the staff. The personnel of the office, Mr. Ray McIntyre, Miss Helen Penn, Mrs. Gloria Luecke, Miss Leola Church, Miss Marie Schmoele and Mrs. Bertha Thomas, are deserving of praise for loyal and efficient help in the administration of the Association's affairs.

T. R. O'BRIEN, Executive Secretary.

The report of the Treasurer, C. E. Hyndman, M.D., St. Louis, follows:

REPORT OF THE TREASURER

The report of the Treasurer is covered in the Financial Statement of the Association for 1951 which appeared in the March issue of THE JOURNAL. Since Delegates have had that issue of THE JOURNAL, the report is not repeated in these reports but Delegates are referred to THE JOURNAL.

C. E. HYNDMAN, Treasurer.

The report of the Committee on Scientific and Postgraduate Work, Daniel L. Sexton, M.D., St. Louis, follows:

REPORT OF THE COMMITTEE ON SCIENTIFIC AND POSTGRADUATE WORK

Since the 1951 session of the Association, there has been progressively more activity on the part of county medical societies for better and more extensive scientific programs. The hyphenation of three groups of small county societies in three different sections of the state, in order to form societies large enough to develop and maintain interest in regular local society scientific meetings, is concrete evidence of this progress. Many county societies have regularly scheduled monthly meetings with programs scheduled far in advance which, of course, makes for better selection of types of programs as well as speakers and films.

Evening district meetings, with various trimmings, have been held in all districts except Districts 3 and 7. Districts 3 and 7 which are Jackson County and St. Louis City hold regularly scheduled scientific meetings throughout the year which consistently offer their members variety and up-to-date scientific development.

More than ninety speakers for scientific programs of various meetings over the state have been furnished by the Committee since the 1951 Annual Session. In addition, a number of county societies make their own arrangements for programs. The Committee commends these societies on their local initiative.

Additional postgraduate programs which attracted many physicians were the Kansas City Southwest Clinical Conference, October 1 to 5; the Annual Clay County Medical Society Clinical Conference held in Excelsior Springs, November 1; the spring meeting, May 24, and Fall meeting, November 8, of the St. Joseph Clinical Society; a six session postgraduate course September 1951 through April 1952 in Sedalia, Springfield and St. Joseph sponsored by the Missouri Academy of General Practice and the University of Kansas Medical School; a series of five postgraduate evening meetings, September 1951 through February 1952 at Mexico, Louisiana, Macon, Rolla, Kennett and Farmington sponsored by the Missouri Academy of General Practice in cooperation with the medical schools of Washington University, Missouri University and St. Louis University.

This Committee is cooperating with the Missouri Division of Health and the Cardiovascular Section of St. Louis University Medical School to bring heart programs before county medical societies over the entire state. The headquarters office of the Association is making every attempt to coordinate postgraduate instruction being offered over the state so that conflicting programs and meetings may be eliminated, or at least reduced to a minimum.

The Committee takes this opportunity to commend St. Louis University and Washington University for the various postgraduate short courses offered to the physicians over the state, and to those particularly in the St. Louis area.

The Committee is pleased with all the opportunities coming its way to be of service to the physicians of this state through their medical organizations by playing a small part in furnishing refresher or postgraduate training.

This opportunity is also taken to express appreciation to the many doctors who have aided the Committee by traveling the highways and byways in this cooperative endeavor to promote the science of medicine.

The scientific program for the Annual Session was arranged by this Committee. The program has been published in THE JOURNAL and in the official programs for the annual session.

DANIEL L. SEXTON, Chairman,
KENNETH GLOVER,
RALPH R. COFFEY,
M. PINSON NEAL,
GUY D. CALLAWAY,
JOSEPH L. FISHER,
PAUL O. HAGEMANN,
CARL R. FERRIS,
WALTER W. TILLMAN,
F. R. CROUCH,
JOHN O'CONNELL.

The report of the Committee on Publication, R. O. Muether, M.D., St. Louis, Chairman, follows:

REPORT OF THE COMMITTEE ON PUBLICATION

JANUARY 1, 1951, TO JANUARY 1, 1952

The 48th volume of THE JOURNAL was completed with the December 1951 issue. During 1951 there were published in THE JOURNAL thirty-five scientific articles, nineteen special articles, eleven postgraduate reviews, eleven clinical pathologic conferences, seventeen case reports, twenty-six editorials, one hundred ten news items, twelve reports of the Feld Secretary, twelve President's pages, seventy-one obituaries, thirty-seven miscellaneous articles, one hundred seventy-four new members, forty-seven society proceedings, one correspondence, two reports from the Woman's Auxiliary and twenty-eight book reviews. There were 598 pages of reading material and 422 pages of advertising and thirteen insert advertisements.

Advertising in THE JOURNAL from January 1, 1951, to January 1, 1952, earned $19,203.47. Subscriptions of nonmembers amounted to $143.40, making $19,346.87 earned by THE JOURNAL. The cost of production of THE JOURNAL (printing and illustrations) was $19,850.78.

R. O. MUETHER, Chairman,
V. T. WILLIAMS,
H. E. PETERSEN,
M. D. OVERHOLSER,
PAUL O. HAGEMANN.

The report of the Committee on Defense, C. E. Hyndman, M.D., St. Louis, Chairman, follows:

REPORT OF THE COMMITTEE ON DEFENSE

APRIL 1, 1951, TO MARCH 1, 1952

Cases pending April 1, 1951	3
New cases during the year	0
Cases settled during the year	0
Cases pending March 1, 1952	3

C. E. HYNDMAN, Chairman,
ROLAND S. KIEFFER,
JAMES H. O'NEIL,
O. B. ZEINERT,
L. P. FORGRAVE.

The report of the Committee on Public Policy and Public Relations, W. F. Francka, M.D., Hannibal, Chairman, follows:

REPORT OF THE COMMITTEE ON PUBLIC POLICY AND PUBLIC RELATIONS

It will be recalled that last year the membership of the Committee was reconstituted to provide a closer integration with the membership of the Council so that activities in the public relations field might be carried out in close liaison with Council policies.

During the year, there have been several meetings of Council members of the Committee, and a full session was held in St. Louis on January 13 to review public relations activities of the year and make recommendations for the future.

Since the last annual meeting of the Association, the public relations program has continued on approximately the same basis as the year before. In this connection, it should be noted that, in the largest sense, almost the whole activity of the state office is in public relations. This applies equally to the work of Mr. O'Brien, in his overall supervision of Association activity and in his contacts with the legislature; to that of Mr. McIntyre in his work as Field Secretary and to that of Miss Penn in connection with THE JOURNAL.

Basically, the Missouri State Medical Association in its entirety is a public relations organization. There is scarcely a single committee or project of the Association that does not have as its chief goal some joint interest of the public and the profession.

It is misleading, therefore, to consider that the modest part of the budget specifically earmarked for public relations represents the whole expenditure of the Association for this important work. That budget provides only for the small part of the total job that is carried on by our public relations agency under the supervision of this Committee and the Executive Secretary.

At its recent meeting in St. Louis the Committee received an informal report by Lemoine Skinner, Jr., on the work of the last year done by him and his office. This work included a wide variety of particular jobs which ranged from handling necessary publicity to assisting in arrangements for the annual meeting, to research and preparation of communications on special problems such as the proposed four-year medical school, to counseling and advising with officers, the Council and the state office. The Committee expresses full satisfaction with the work of Mr. Skinner's firm and recommends that the relationship with him be continued.

The Committee has considered the desirability of extending the task of the public relations agency from its present limited concern for particular problems as they arise to an overall responsibility to take the initiative in communicating on a continuous and regular basis with all elements of the public.

It appears that the budget of the Association at the present time does not warrant the increase in fee (over the present basic $250 per month) which such an extended program would require.

There are, however, a number of particular projects which the Committee feels it might be desirable to initiate at this time.

The first of these is a Secretary's Letter, which would be issued to all members whenever developments of special interest occurred. The Committee believes this would go a long way toward making all doctors better informed about the work and problems of the Missouri State Medical Association. A trial of this project has been authorized by the Committee, the cost of which will involve postage, duplicating, stationery and an extra $50 fee to the public relations agency for each letter prepared after the first one.

The Committee also has authorized further study of the possibility of arranging radio programs to be sponsored by the profession at strategic points throughout the state.

Finally, the Committee believes that the preparation of a handbook on recommended public relations procedures for the office of the individual doctor—with heavy emphasis on the responsibility of the medical secretary in this connection—is a project of great potential value and one for further study. The newly formed state organization of medical secretaries might well be brought into the project. (This might prove the value of joint undertakings in the public relations field with a number of other organizations closely related to the profession.)

W. F. FRANCKA, Chairman,
C. EDGAR VIRDEN,
J. W. THOMPSON,
J. L. WASHBURN,
G. W. WINN.

The report of the Committee on Medical Education and Hospitals, John S. Knight, M.D., Kansas City, Chairman, follows:

REPORT OF COMMITTEE ON MEDICAL EDUCATION AND HOSPITALS

Most of the activity that has been involved in connection with the Committee on Medical Education and

Hospitals has been in an effort to establish a four year medical school for the University of Missouri. At the present time there is a bill pending in the Missouri State Legislature in reference to a four year medical school for the State of Missouri.

Information relative to the four year medical school is covered in reports of the Council. In addition, a complete résumé of a survey made by Dr. Harold S. Diehl, University of Minnesota, majority and minority reports of the Board of Curators, University of Missouri, were published in THE JOURNAL of the Missouri State Medical Association, March 1951.

JOHN S. KNIGHT, Chairman,
TRAWICK STUBBS,
R. M. S. BARRETT,
O. J. GIBSON,
OLIVER ABEL.

The report of the Committee on Cancer, E. C. Ernst, M.D., St. Louis, Chairman, follows:

REPORT OF THE COMMITTEE ON CANCER

Previous Cancer Committee recommendations strongly urged the need for a more extensive, all-inclusive, state-wide Missouri cancer survey which would include evaluation of the past services and administrative set-ups similar to, but on a broader basis than, the indigent cancer service statistics recently compiled by the medical staff of the Barnard Free Skin and Cancer Hospital. Unfortunately, this former 1949 survey was limited to obtaining information relative to the actual number of free cancer visits in the seventy-five counties served by this forty-five year old St. Louis cancer institution.

Present Cancer Service: (a) The Ellis Fischel State Cancer Hospital has amply served indigent cancer patients throughout the mid and greater part of the western counties of the state.

(b) The Kansas City detection and diagnostic cancer clinics at present screen a large section of the remaining counties in the western half of Missouri.

(c) The cancer service program of the American Cancer Society throughout the more populated rural cities in Missouri in cooperation with the Cancer Committee and the Department of Public Health has, to a limited extent, served the indigent cancer patients' needs, while

(d) The Barnard Free Skin & Cancer Hospital outpatient clinic and hospital facilities took care of the majority of the indigent cancer problems in the eastern half of the state.

The scope of these activities in selected communities has been broadened year by year, but many of the originally planned, more extensive state-wide surveys and financed cancer projects were of necessity curtailed in the past due to a lack of available funds.

State-wide Cancer Survey: During the latter half of 1951 the Missouri Division of the American Cancer Society initiated and financed a more general, all-inclusive, state-wide cancer survey evaluation of the administrative and service activities in Kansas City, St. Louis and the remaining Councilor Districts.

The Committee is happy to report that at the outset this five months' survey was received throughout the state in an exceptionally fine manner. The spirit of cooperation was so evident that it is believed all considerations by the Missouri Division should take into account the active interest and desire of people to achieve the objectives of the Division. A survey of this nature, as directed by Mr. Willier of St. Louis and his professional survey groups, could easily have aroused suspicions, caused disruptions or postponement of activities. Instead, the survey itself appeared to serve as a stimulus for increased interest and greater activity among both the lay and professional groups of the state.

It should be self evident that this is an unbiased and disinterested report; for example, the cancer program in St. Louis failed to receive a favorable evaluation. In part at least this is due to the confusion created by the continued competitive cancer activities of the St. Louis Cancer Society group of field army workers who periodically have their own campaign for funds in competition with the American Cancer Society. The Damon Runyon Cancer group likewise conducted a four weeks cancer campaign for donations during the last year. Added to this, the proposed affiliation of the Barnard Free Skin and Cancer Hospital with Washington University added to the confusion already present in the minds of the public. Both problems are in the hands of the courts. It is regretted that a final decision has not been reached. This original injunction and appeal to the Supreme Court of Missouri against the directors of Barnard Hospital was instigated by the Attorney-General of Missouri and the City of St. Louis as amicus curiae and Mr. Jacob Lashly as counsel for the appellant—the parties opposing the proposed plan of amalgamation of Washington University Medical School and Barnard Free Skin and Cancer Hospital.

Leadership: It has also become evident that there must be a strong, capable and active leadership if the concentrated energies of thousands of volunteers, the various county medical societies and the interest of individual professional groups is to be maintained. It will take years of cooperative effort to coordinate all of the many lay and professional groups interested in the cancer problem.

Proposed Initial Recommendations: The appointment of a special committee representing St. Louis, Kansas City and rural Missouri to study the possible advantages of a state-wide survey was originally suggested by the Cancer Committee.

This survey was completed recently and preliminary recommendations were reported to the Executive Committee of the Missouri Division at a recent meeting held in Jefferson City. A copy of this state-wide survey was sent to the chairman of the Council. At the same time the councilors of the Association were canvassed for suggestions regarding future state cancer programs and a few of their suggestions have been incorporated in this Cancer Committee report.

The Executive Committee initially recommended certain changes in the by-laws for the creation of a new office; namely, that of executive vice president of the Missouri Division of the American Cancer Society. It was realized that in view of the importance of the medical program in the cancer field in the State of Missouri, consideration should be given to the appointment of such an official as to his medical background and executive ability for supervising and coordinating the future activities of the Cancer Committee and the Department of Health with the Missouri Division for future cancer programs. It is entirely possible that such an appointment should be on a short term basis and only after the new executive vice president and president have made a complete analysis of the immediate and future long range medical and scientific possibilities. Needless to state, such a program will never be successful unless it begins with the grass roots counties in need of service.

It was further recommended that the state headquarters will be reorganized along the lines recommended in the report, but subject to the approval of the selected executive vice president. Thereafter, new committees will be appointed in the scientific, medical and professional fields, including lay and professional education programs.

Diagnostic Cancer Clinics: Members of the Cancer Committee have personally surveyed most of the cancer projects, diagnostic clinics and detection centers and expect to make their recommendations through

the executive committee of the Missouri Division and the Division of Public Health. In this connection one point worthy of consideration was emphasized in this recent survey; namely, that diagnostic cancer clinics are not established at the drop of a hat, and that local situations and personalities are problems which must be given equal consideration.

Cancer Service Committees: Initially the cooperation of the medical profession, nurses, volunteer workers, and the State Health Departments must be enlisted.

Therefore, the Committee is looking forward to a conservative reorganization of the service committees in order that proper planning of the service projects may more efficiently and effectively fulfill the cancer situations in the various communities. The present projects committee may be subdivided as mentioned into three units; namely, scientific, medical and professional. Each of these units would be responsible for the essential planning in these three fields and each would be charged with the responsibility of reviewing proposed projects. In all of these activities the Cancer Committee and the State Health Department would assume equal responsibility with the executive committee of the Missouri Division of the American Cancer Society.

United Fund Drives: It should be noted that health organizations interested in state-wide service programs face possible future problems in connection with local community efforts of uniting all of the volunteer charity health and welfare campaigns into a single drive for donations. At least twenty counties in Missouri, ranging from Kansas City down to towns of small size, are reported to have had such drives during 1951 and a larger number of united campaigns are planned for 1952.

Besides the advantage of obtaining service funds through the medium of a single campaign, the survey just completed suggests that local cancer units of the Missouri Division might; "initially at least lose volunteers for their year round cancer service program if the annual cancer crusade is eliminated and the local unit becomes a part of a single annual united drive."

"Part of the interest in the work of the American Cancer Society results from a volunteer worker first having become interested during such a single cancer crusade or cancer campaign and later becomes a year round active volunteer worker. Campaign service is a vehicle of education as well as a vehicle for raising money. The service program and educational campaigns in cancer are continuous throughout the year, with the exception of the month of April when additional activities are added to the already crowded curriculum in the interest of obtaining funds. Volunteers can be obtained for the campaign who would not be available on the year round basis for other activities. Budgets are not realistic and what happens when the united drives fail." These are questions offered for evaluation by this survey. From all reports it is evident that the United Campaign drive in Kansas City was financially successful.

Comment: It is understood, of course, that many of the recommendations made in this survey may neither be practical nor meet with the full approval of the Cancer Committee. However, a beginning has been made and the hopes of the previous annual recommendations for such an independent survey by the Missouri Division in cooperation with the Cancer Committee of the Association have thereby in part at least been fulfilled.

Edwin C. Ernst, Chairman,
Wm. E. Leighton,
Everett Sugarbaker,
E. Kip Robinson,
Marvin Napper.

The report of the Committee on Medical Economics, A. P. Rowlette, M.D., Moberly, follows:

REPORT OF THE COMMITTEE ON MEDICAL ECONOMICS

There was no occasion for this Committee to meet during the year. The annual report of the Blue Cross and Blue Shield in Missouri is reported herewith:

ST. LOUIS BLUE CROSS

Membership, December 31, 1950	473,477
Membership, December 31, 1951	442,818
Reserve per agreement	$1.89
Reserve per participant	.81
Number of cases hospitalized	158,382
Number of days of hospitalization	1,146,430
Average days stay for year	7.2
Amount paid hospitals during year	$12,276,382

KANSAS CITY BLUE CROSS

Membership, December 31, 1950	315,284
Membership, December 31, 1951	330,143
Reserve per agreement, December 31, 1951	$5.39
Reserve per participant, December 31, 1951	2.45
Number of cases hospitalized	44,173
Number of days hospitalization	328,889
Average days stay for year	7.45
Amount paid hospitals during year	$3,428,640.81

MISSOURI MEDICAL SERVICE (BLUE SHIELD) ST. LOUIS

Membership, December 31, 1950	129,975
Membership, December 31, 1951	133,041
Reserve per agreement	$6.69
Reserve per participant	$3.25
Number of cases paid for	43,357
Amount paid during year	$2,273,325

KANSAS CITY BLUE SHIELD SURGICAL MEDICAL CARE

Membership, December 31, 1950	284,152
Membership, December 31, 1951	301,293
Reserve per agreement, December 31, 1951	$3.65
Reserve per participant, December 31, 1951	$1.66
Number of cases paid for during year	96,545
Amount paid to participating physicians during the year	$2,699,833.12

A. P. Rowlette, Chairman,
C. T. Herbert,
Arthur B. Smith,
B. L. Sinner,
G. A. Aiken.

The report of the Committee on Mental Health, Frank M. Grogan, M.D., St. Louis, follows:

REPORT OF THE COMMITTEE ON MENTAL HEALTH

The Committee has been asked to approve Senate Bill 214 which proposes licensure of clinical psychologists. The Committee desires to go on record as strongly in favor of licensing clinical psychologists. Such licensure was recommended in the Committee report for 1951.

However, Senate Bill 214 is identical with that under consideration last year. None of the changes recommended by the Committee have been incorporated in the bill. In the Committee's opinion the bill fails to set forth proper qualifications and training requirements for licensure of clinical psychologists, nor does it properly define their rights and privileges, their limitations and responsibilities.

The Committee is impressed by the fact that various diseases of a physical nature closely simulate mental and emotional disorders. It is felt that a candidate for license to practice clinical psychology should be

trained in the basic sciences and various clinical subjects so that he may readily recognize somatic symptoms which so often present themselves. The bill as it now stands fails to require such basic training.

The Committee disapproves the bill as now presented and recommends that it be rewritten so as to include the proper qualifications.

F. M. GROGAN, Chairman,
B. LANDIS ELLIOTT,
PAUL HINES,
E. F. HOCTOR,
ERNEST H. PARSONS.

The report of the Committee on Maternal Welfare, Kenneth E. Cox, M.D., Kansas City, Chairman, follows:

REPORT OF THE COMMITTEE ON MATERNAL WELFARE

The Committee met in Jefferson City, February 3, 1952. Those present were Drs. Kenneth E. Cox, Kansas City, Chairman; E. Lee Dorsett, St. Louis; E. E. Wadlow, St. Joseph; J. L. Johnston, Springfield; Leo J. Hartnett, St. Louis; Joseph Webster, Kansas City; Gerald L. Miller, Kansas City; Buford G. Hamilton, Director, Division of Health, Jefferson City; Lynn M. Garner, Division of Health, Jefferson City; Mr. T. R. O'Brien, Executive Secretary, Missouri State Medical Association.

The chairman called the attention of the Committee to the following publications which present information about maternal welfare: November 1951 issue, *American Journal of Obstetrics and Gynecology* "The Maternal Mortality Remainder"; *Research Council for Economic Security*, "Our National Health Problem"; *Capitol Clinic* of American Medical Association Washington office, issue, January 29, 1952 "Hill Burton Funds Available and Veterans' Administration Report"; November issue, *Lederle Bulletin*, "Changing Economic Base for Rural Health Services."

The Committee was informed that there were 87,948 live births in Missouri in 1950 and a total of 72 maternal deaths. This death rate compares favorably with the rate in neighboring states, as well as nation wide. The Committee has been considering implementation of action taken by the Committee last year to study the causes of maternal deaths and contributory causes of such deaths.

Despite the fact that there were only 72 maternal deaths reported in Missouri, it was thought that many of the deaths were preventable and that a method should be developed whereby the cause of death could be reviewed by the Committee. The State of Michigan has developed a program whereby the Michigan State Medical Association and the Michigan State Department of Health have jointly set up a committee to review maternal deaths. Information relative to these deaths is secured from the attending physician and hospital in the form of case histories. It is hoped then that the information secured will provide a means whereby education of physicians, hospital personnel and expectant mothers may eventually eliminate maternal deaths.

The Obstetric and Gynecology Societies of St. Louis and Kansas City have been studying this problem relative to deaths, totaling 30, in those cities. Representatives from those cities believed that reviews of the maternal deaths in those cities could be completed without expense. However, it was pointed out that, in order to secure all necessary data, personal interviews should be held with physicians, hospital personnel and others and that would necessarily take considerable time of the physicians conducting the reviews. This would be true, particularly in areas of the state outside the major cities. After discussion it was agreed that a budget of $3000 would be required to complete the study. This would provide compensation and expenses for the physician reviewers in outstate Missouri and other administrative costs.

The Director of Maternal Welfare for the State Division of Health stated that funds were available for the study. However, the Committee believes that all, or at least part of the expenses, should be borne by the State Medical Association. It was agreed that the report of the Committee be presented to the Council and that the Council be asked to appropriate the necessary funds to carry out the study.

The Committee considered the statutes of Missouri and the regulations of the Division of Health regarding the care of the eyes of the newborn. It was agreed that the recommendations contained in an editorial in the January 12, 1952, issue of *The Journal of the American Medical Association* should be followed in the care of the eyes of the newborn.

The Committee considered the situation relative to maternity homes and hospitals. These homes are by statute under the jurisdiction of the State Department of Welfare. The Director of the Division of Health was asked to secure information about these maternity homes and hospitals, for the later consideration of the Committee.

The Committee discussed premature births and deaths. It was agreed to recommend to the Committee on Scientific and Postgraduate Work that programs be presented to county medical societies on the obstetric and pediatric care of premature newborn. This Committee will cooperate with the Committee on Infant Care in order to develop suitable programs.

The State Division of Health provides a pamphlet for expectant mothers which is distributed by county health nurses and physicians. The pamphlet is known as "Your Diet—Before the Baby Comes." The pamphlet is now being revised and the Committee was asked to check the revision. The Committee approved of the new pamphlet.

Senate Bills 2337 and 1245, relative to the establishment of EMIC by the federal government, were reviewed. Action of the American Medical Association House of Delegates in December, 1951, relative to the federal government using Blue Cross and Blue Shield plans in the event EMIC programs are established, was explained.

The State Division of Health was asked to provide charts by county showing total number of births, maternal deaths, premature newborn deaths and deliveries under medical doctors, osteopaths and midwives for the future information of the Committee.

KENNETH E. COX, Chairman,
J. L. JOHNSTON,
E. E. WADLOW,
E. LEE DORSETT,
LEO J. HARTNETT.

The report of the Committee on Infant Care, George V. Herrman, M.D., Kansas City, Chairman, follows:

REPORT OF THE COMMITTEE ON INFANT CARE

The Committee assisted in the arrangements for the 1952 Annual Session program. A symposium on "Pediatrics" will be presented.

The Committee studied a proposal from the Missouri Association of Social Welfare to participate with other groups in a Child Care Commission to implement the White House Conference. A meeting of the participating groups was held in Kansas City on November 2, 1951, and two of the Committee members were present. It is believed that at present the Association should secure more information about the aims and objectives of the newly formed Child Care Commission before actively participating.

A member of the Committee attended the Third Annual Conference of Physicians and Schools, held in Highland Park, Illinois, November, 1951.

A subcommittee is assisting the Division of Health in the preparation of a new manual of contagious and infectious diseases. The report of the subcommittee will not be ready in time for inclusion in this report.

Two meetings of the Committee were held during 1951.

George V. Herrman, Chairman,
Daniel B. Landau,
H. E. Petersen,
Peter G. Danis,
Park J. White,
J. S. Sennott.

Dr. Herrman: Since the report of the Committee on Infant Care was written, the subcommittee on the revision of the Public Health Manual met on March 13. At this meeting all proposed changes in the Manual were discussed, accepted, rejected or amended. Dr. Belden, in charge of the revision of the Manual, thanked the Committee for its efforts and appeared completely satisfied with the actions taken by the Committee on all points of revisions on which there had been any question.

The report of the Committee on Health and Public Instruction, A. W. McAlester, III, M.D., Kansas City, Chairman, follows:

REPORT OF THE COMMITTEE ON HEALTH AND PUBLIC INSTRUCTION

This Committee is becoming more and more indebted to the various local Woman's Auxiliaries to county medical societies over the state. Their efforts and programs for bringing lay health education before public groups of sundry make-ups is worthy of much commendation. The Committee, primarily through the headquarters office, has been pleased to furnish numerous medical speakers for public relations meetings sponsored by Woman's Auxiliaries, both for invitational meetings as well as for open public health forum sessions.

Health Forums, or open public meetings at which practical health information is presented through films, speakers or discussion panels, have been sponsored by County Medical Society and Auxiliary forces during the last year in Buchanan, Franklin, Greene, Jackson, Jefferson, Lafayette, Miller - Moniteau - Morgan, St. Louis, St. Louis City and Saline counties.

Many speakers have been furnished to civic clubs for their programs on health at the direct request of these clubs.

This Committee, for the third consecutive year, with the cooperation of the Bureau on Scientific Exhibits of the American Medical Association, sponsored a health information exhibit at the Missouri State Fair at Sedalia, August 18 through 26. The exhibit "Mechanical Quackery" was displayed in the Educational Building in the "Hall of Health" which was under the supervision of the Missouri Health Council. This year's exhibit attracted more attention than any previous ones and was viewed by a large number of the some 435,000 people attending the Fair.

This Committee maintains in the Association headquarters office lists of health information material and films that are available. Three county medical societies and their auxiliaries are now sponsoring health educational programs over local radio stations. These are Jackson, St. Louis and St. Louis City. Other medical societies over the state may well look into this matter with a view to similar activity as one of their projects in the coming year.

A. W. McAlester, III, Chairman,
Rolla B. Wray,
George A. Kelling,
Claude J. Hunt,
J. Earl Smith.

The report of the Committee on Constitution and By-Laws, Durward G. Hall, M.D., Springfield, Chairman, follows:

REPORT OF THE COMMITTEE ON CONSTITUTION AND BY-LAWS

The Committee has given study to the Charter, the Constitution and the By-laws. The report is broken down in three sub-headings with appropriate explanations.

CHARTER

It was recommended by the House of Delegates at the last annual session that the Charter of the Association be amended as outlined on page 558 of the July, 1951 issue, Journal of the Missouri State Medical Association, official transactions of the House of Delegates. The Council was instructed to take the necessary legal steps to have the Charter amended. An attorney then advised that the proposed amended Charter be altered and the alterations were referred to this Committee for study. The Committee approved of the proposed alterations, referred the substitute Charter to the Council for its approval, following which the amended Charter was granted by the Circuit Court of St. Louis and approved by the Secretary of State of Missouri, as follows:

AMENDED CHARTER of the Missouri State Medical Association, dated December 7, 1951.

Article I

This corporation, located in the City of St. Louis, Missouri, shall be known by the name and style of the Missouri State Medical Association, and its duration shall be perpetual.

Article II

The purposes of this corporation are: to bring into compact organization the entire medical profession of the State of Missouri, aiding thereby the extension of medical knowledge and the advancement of medical science; to promote and elevate the standards of medical education; to assist in the enactment and enforcement of just medical and public health laws; to encourage friendly intercourse among physicians; to enjoin and sustain measures of interest and advantage to the public and the medical profession; and, to promote the advancement of science, knowledge and skill in the medical profession.

Article III

This corporation shall have all the powers necessary or proper for the accomplishment and furtherance of the above stated purposes and all other powers incidental or related thereto, including but not by way of limitation, the following:

(a) To purchase, receive and take by gift, grant, devise or bequest, real or personal property; to hold, administer, sell, invest and reinvest such property, and to use, disburse and distribute such property, and the income therefrom, for the scientific uses for which this corporation is constituted.

(b) To contract, be contracted with, to sue and be sued, to plead and implead, and shall have the right to acquire, own, hold, mortgage and dispose of such real and personal property as shall be necessary for the proper maintenance and conduct of its affairs.

Article IV

This corporation shall have no capital stock and is not formed or organized for pecuniary profit in any form whatsoever.

Article V

The Officers, Directors and Members of this corporation shall be forever exempt from liability for debts and obligations of any kind of this corporation.

ARTICLE VI

This corporation shall have power to execute any trust, the purpose whereof is within the purview of Article 352.030, Chapter 352, R. S. Mo. 1949, and within the objects and purposes for which this corporation is formed, and may receive and take by deed, devise or bequest, in its corporate capacity, any property, real or personal, for the uses and purposes of such trust, and to execute the trust so created.

ARTICLE VII

This corporation shall have the right to make such rules and regulations as may be necessary to carry out the purposes of the Association.

* * *

CONSTITUTION

The proposed new Constitution was presented at the last session of the House of Delegates. The draft was accepted by the House of Delegates for publication in THE JOURNAL as required by our By-laws, and it was published in the July 1951 and February 1952 JOURNALS. It is now lying on the table in conformity with action taken by the House of Delegates last year. The committee's interpretation of parlimentary usage precluded changes in the proposed Constitution in this status, but none were deemed indicated.

CONSTITUTION

ARTICLE I. NAME OF THE ASSOCIATION

The name and title of this organization shall be the Missouri State Medical Association.

ARTICLE II. PURPOSE

The purpose of this Association is the promotion of the science and art of medicine, the protection of public health, the betterment of the medical profession, and, by uniting with similar organizations in other states and territories of the United States, to form the American Medical Association.

ARTICLE III. MEMBERSHIP

Membership in this Association shall be limited to and include all members in good standing in component societies which hold charters from this Association.

ARTICLE IV. HOUSE OF DELEGATES

The House of Delegates shall be the legislative body of this Association and shall consist of delegates elected by the component societies. It shall elect a Speaker and Vice Speaker from its body. Its Secretary shall be the Secretary of the Missouri State Medical Association.

ARTICLE V. COUNCIL

The Council shall be the executive body of this Association when the House of Delegates is not in session. It shall be the judicial body of the Association when matters are referred to it for decision by the Association, by component societies or by individual members thereof. It shall consist of the President, President-Elect, Secretary, Treasurer and the duly elected Councilors from each Councilor District. Nine members shall constitute a quorum.

ARTICLE VI. SESSIONS AND MEETINGS

Section 1. The Association shall hold an Annual Session at a place fixed by the House of Delegates, the time of which shall be fixed by the Council.

Sec. 2. Special meetings of the Association or of the House of Delegates may be called by a two third vote of the Council and shall be called upon a petition signed by members equal in number to one third of the total number of delegates certified for the last Annual Session.

ARTICLE VII. OFFICERS

Section 1. The officers of this Association shall be a President, a President-Elect, three Vice Presidents, a Secretary, a Treasurer, a Speaker and a Vice Speaker of the House of Delegates and ten Councilors selected as provided for.

Sec. 2. All officers except Councilors shall be elected annually. The terms of Councilors shall be two years. Half of the membership of the Council shall be elected each year. The Secretary and the Treasurer shall be elected by the Council. The delegates present from each Councilor District shall meet on the morning of the last day of the Annual Session and elect the Councilor from that district. In the event of death, resignation or removal of any Councilor, the Council may appoint a successor to serve until the vacancy is filled at the next Annual Session. All of the officers shall serve until their successors are elected and installed.

ARTICLE VIII. FUNDS, EXPENSES AND BUDGET

Funds shall be raised by a per capita assessment on each component society. The amount of the assessment shall be fixed by the House of Delegates. Funds may also be raised in any other manner approved by the House of Delegates. The Council shall submit an annual budget to the House of Delegates. All resolutions providing for appropriations shall be referred to the Council and all appropriations approved by the Council shall be included in the annual budget.

ARTICLE IX. REFERENDUM

At any General Meeting of the Association it may, by a two thirds vote, order a general referendum upon any question pending before the House of Delegates. The House of Delegates may, by a vote of its members, submit any question to the membership of the Association for its vote. A majority vote of all members of the Association shall determine the question.

ARTICLE X. SEAL

The Association shall have a common seal. The power to change or renew the seal shall rest with the House of Delegates.

ARTICLE XI. AMENDMENTS

The House of Delegates may amend any article of this Constitution by a two third vote of the delegates present and voting at any Annual Session, provided that such amendment shall have been presented in open meeting at the previous Annual Session and that it shall have been published twice during the year in THE JOURNAL of this Association or sent officially to each component society at least two months prior to the meeting at which final action is to be taken.

* * *

BY-LAWS

The By-laws necessarily received careful study by the Committee so that they would conform to the amended Charter and to the recommended new Constitution. The Committee after considerable study and many changes submit the following which it believes meets these requirements. Their approval is recommended.

BY-LAWS

CHAPTER I. MEMBERSHIP

Section 1. Members of this Association shall be physicians whose names have been certified by secretaries of component societies to the Secretary of this Association that they are duly elected members of a com-

ponent society and are legally qualified physicians practicing in Missouri. Each member must be a citizen of the United States, of good moral and professional standing, and must not support, nor practice, nor claim to practice any exclusive system of medicine.

Sec. 2. No person who is under sentence of suspension or expulsion from any component society of this Association or whose name has been dropped from its roll of members shall be entitled to any of the rights of benefits of this Association.

Sec. 3. There shall be four classes of members as follow:

Active members shall be limited to those members of component societies who (1) hold the degree of Doctor of Medicine or Bachelor of Medicine, and (2) are entitled to exercise the rights of active membership in their component societies, as determined by their component societies, subject to the provisions of these By-laws.

Junior members shall be limited to those members of component societies who (1) become members within the first four years subsequent to graduation from medical school, or (2) who are serving full time, approved internship or residency in a hospital.

Honor members shall be limited to Honor members of component societies, which societies have requested that active members who have reached advanced years and have long served the Association and the profession be made Honor members of the Association. They shall enjoy all the privileges of active membership and shall be exempt from the payment of dues.

Associate members shall be limited to persons not provided for in the various classes of membership who are engaged in the pursuit of a medical or allied science and, by action of the component societies, become associate members of the Association. They shall have the right to attend scientific sessions and such other privileges as may be extended to them by the House of Delegates. They shall not be eligible to vote and shall be exempt from the payment of dues.

Chapter II. General Meetings

Section 1. The General Meetings shall be open to all registered members and guests.

Sec. 2. All papers read before this Association shall be its property. Each paper, when it has been read, shall be deposited with the Secretary. Authors of papers read before this Association shall not cause them to be published elsewhere until after they have been published in its Journal.

Sec. 3. No person in the active practice of medicine in the State of Missouri shall appear on the program of the Association unless he or she is a member of the Missouri State Medical Association or an affiliated association or organization.

Chapter III. House of Delegates

Section 1. The House of Delegates shall meet annually at the time and place of the Annual Session. It shall remain in continuous session on the first day of the Annual Session and complete the work coming before it at that session. It shall meet on the last day of the Annual Session to receive the report of the Nominating Committee and complete unfinished business and the election of officers. No new business shall be introduced at the last session without the unanimous consent of the delegates.

Sec. 2. Each component county society shall be entitled to send each year one delegate or one corresponding alternate to the House of Delegates for each fifty full paid members or fraction thereof in the Association on December 31 of the previous year; provided, however, that each component society which is composed of two or more county societies shall be entitled to at least one delegate or one corresponding alternate from each of the counties of which it is composed; however, such delegates or corresponding alternates must reside in the county they represent.

Sec. 3. Forty delegates shall constitute a quorum of the House of Delegates. All meetings of the House of Delegates shall be open to members of the Association.

Sec. 4. From among members of the House of Delegates the Speaker shall appoint reference committees to which reports and resolutions, on a majority vote of the House of Delegates, shall be referred as follows:

Reference Committee on Amendments to the Constitution and By-laws.

Reference Committee on Resolutions.

Reference Committee on Miscellaneous Affairs.

Reference Committee on Medical Education and Public Welfare.

Reference Committee on Reports of Officers.

The Speaker may appoint such other reference committees as he may deem necessary, upon approval of the House of Delegates.

The President shall appoint a Committee on Credentials.

Sec. 5. The House of Delegates shall elect delegates and alternates to the House of Delegates of the American Medical Association in accordance with the Constitution and By-laws of that body.

Sec. 6. The House of Delegates shall divide the state into Councilor Districts specifying what counties each district shall include and, when the best interest of the Association and the profession will be promoted thereby, organize in each a district medical society of which all members of the component county societies shall be members.

Sec. 7. The House of Delegates shall have authority to appoint committees for special purposes from among members of the Association who are not members of the House of Delegates. Such committees shall report to the House of Delegates and may be present and participate in the debate on their reports.

Sec. 8. The House of Delegates shall receive and act upon a complete and detailed annual audit of receipts and expenses of the preceding year and a proposed budget for the current calendar year which shall have been prepared by the Council and submitted to the component county societies at least four weeks prior to the Annual Session. These shall be published in The Journal.

Sec. 9. The following shall be the general order of business of the House of Delegates for the first meeting of the session:

1. Call to order by the Speaker.
2. Report of the Committee on Credentials.
3. Roll Call.
4. Reading and adoption of minutes.
5. Report of Officers.
6. Report of committees.
7. Unfinished business.
8. New business.

The following shall be the general order of business of the House of Delegates for the last meeting of the session:

1. Call to order by the Speaker.
2. Report of the Committee on Credentials.
3. Roll Call.
4. Reading and adoption of minutes.
5. Report of the Nominating Committee.
6. Election of Officers.
7. Reports of Officers.
8. Reports of Committees.
9. Unfinished business.
10. New business (See Sec. 1, Chap. III).
11. Installation of Officers.
12. President's Appointments and installation of members to committees.

13. Selection of the place for the next Annual Session.

At any meeting of the House of Delegates, the order of business may be changed by a two thirds affirmative vote of the members present and voting.

CHAPTER IV. ELECTION OF OFFICERS

Section 1. The President on the first day of the Annual Session shall select a Committee on Nominations consisting of ten delegates, no two of whom shall be from the same Councilor District. The Committee on Nominations shall report the result of its deliberations to the House of Delegates in the form of a ticket containing the name of one member for each of the offices listed in Article 7 of the Constitution which are to be filled at that Annual Session excepting the President-Elect who shall be nominated from the floor of the House of Delegates.

Sec. 2. All elections of officers shall be by acclamation unless ballot is called for. A majority of the votes cast shall be necessary to elect except for delegates and alternates to the American Medical Association, who shall be elected as follows:

In case no delegates or alternates for the American Medical Association receive on the first ballot a majority of the votes, the nominees shall be declared elected in the order of the highest number of votes received until the allotted number shall have been chosen. In case of a tie vote for delegate or alternate, the tie shall be determined by lot.

In case no nominee for general offices of the Association (See Article 7, Constitution) receives a majority of the votes on the first ballot, the nominee receiving the lowest number of votes shall be dropped and a new ballot taken. This procedure shall be continued until one of the nominees receives a majority of all the votes cast, when he shall be declared elected.

Sec. 3. Nothing in this chapter shall be construed to prevent additional nominations being made from the floor by members of the House of Delegates.

Sec. 4. Delegates present at the Annual Session from Councilor Districts whose Councilors' terms expire shall hold meetings on the morning of the last day of the Annual Session and elect a Councilor for their District for a term of two years. The name of the elected Councilor shall be given on a prescribed form to the Secretary for presentation to the House of Delegates. Each candidate for Councilor must reside or practice in the district for which he is elected. The Speaker and Vice Speaker shall not serve more than three consecutive terms.

CHAPTER V. DUTIES OF OFFICERS

Section 1. The President, or his designated representative, shall preside at all scientific sessions of the Association. He shall preside at the House of Delegates in the absence of the Speaker or Vice Speaker and until their successors are elected. He shall appoint all committees not otherwise provided for. He shall deliver an annual address at such time as may be arranged and shall perform such other duties as custom or parliamentary usage requires. He shall be the real head of the profession of the state and assist the Councilors in building up the county societies and in making their work more practical and useful.

Sec. 2. The President and the President-Elect shall be members of the Council and shall attend all meetings of the Council. Should the office of President-Elect become vacant through death or otherwise the Council may fill the vacancy until the next Annual Session of the Association.

Sec. 3. The Vice Presidents shall assist the President in the discharge of his duties. In the event of the death, resignation or removal of the President the Council shall select one of the Vice Presidents to serve the unexpired term.

Sec. 4. The Treasurer shall give bond in the sum of $20,000. He shall demand and receive all funds due the Association, together with bequests and donations. He shall pay money out of the treasury only on a written order of the President, countersigned by the Secretary; he shall subject his accounts to such examination as the House of Delegates may order, and he shall annually render an account of his actions and of the state of the funds in his hands.

Sec. 5. The Secretary shall attend the General Meetings of the Association and the meetings of the House of Delegates, and shall keep minutes of their respective proceedings in separate record books. He shall be Secretary of the Council and shall keep a record of its proceedings. He shall be custodian of all record books and papers belonging to the Association, except such as properly belong to the Treasurer, and shall keep account of and promptly turn over to the Treasurer all funds of the Association which come into his hands. He shall provide for the registration of the members and delegates at the Annual Session. He shall, with the cooperation of the secretaries of the component societies, keep a card index register of all the legal practitioners of the state by counties, noting on each his status in relation to his county society, and shall transmit a copy of this list to the American Medical Association, transmitting to its Secretary each month a report containing the names of new members and the names of those dropped from the membership roster during the preceding month. He shall conduct the official correspondence, notifying members of meetings, officers of their election and committees of their appointment and duties. He shall employ such assistants as may be ordered by the Council and shall make an annual report to the House of Delegates. He shall supply all component societies with the necessary blanks for making their reports and shall collect from them the regular per capita dues and assessments and turn the same over to the Treasurer. The amount of his salary shall be fixed by the Council.

CHAPTER VI. COUNCIL

Section 1. The Council shall meet during the Annual Session at such times as necessity may require, subject to the call of the Chairman or on petition of three Councilors. It shall meet on the last day of the Annual Session to organize. The Council shall elect a Chairman and a Vice Chairman for a term of one year. The Chairman may be reelected to serve not more than four consecutive terms of one year each. The Council shall, through its Chairman, make an annual report to the House of Delegates.

Sec. 2. Each Councilor shall be organizer, peacemaker and censor for his district. He shall visit each county in his district at least once a year for the purpose of organizing component societies where none exists, for inquiring into the condition of the profession, and to keep in touch with the activities of and to aid in the betterment of the component societies of his district. He shall make reports of his work and the condition of the profession of each county in his district to the Council. The necessary traveling expenses incurred by each Councilor in the line of duties herein imposed may be allowed on a proper itemized statement submitted monthly and within the current year, but this shall not include his expense in attending the Annual Session of the Association. No Councilor shall be eligible for the position of Delegate to the House of Delegates during his term of office as Councilor, nor shall he vote in the House of Delegates.

Sec. 3. The Council shall be the executive body of the House of Delegates and between sessions shall exercise the power conferred on the House of Delegates by the Constitution and By-laws.

Sec. 4. The Council shall be the Board of Censors of the Association. It shall hear, and by a majority vote, determine and adjudicate, all questions: Involving the right and standing of members, whether in relation to other members, to the component societies, or to this Association; of an ethical nature brought before the House of Delegates or the General Meeting, which shall be referred to the Council without discussion; of discipline affecting the conduct of members or component societies, from which an appeal is taken from the decision of a District Councilor. Its decision in all cases shall be final, unless appealed to the then convened meeting, or to the next meeting, of the House of Delegates.

Sec. 5. Charters shall be issued to county societies only on approval of the Council, and shall be signed by the President and Secretary of this Association. Upon the recommendation of the Council, the House of Delegates may revoke the charter of any component society whose actions are in conflict with the letter or spirit of this Constitution and By-laws.

Sec. 6. In sparsely settled sections the Council shall have authority to organize the physicians of two or more counties into societies, to be suitably designed so as to distinguish them from district societies, and these societies, when organized and chartered, shall be entitled to all rights and privileges provided for component societies until such counties shall be organized separately.

Sec. 7. The Council shall provide for and supervise the issuance of all publications of the Association including proceedings, transactions and memoirs, and shall have authority to appoint an Editor and such assistants as it deems necessary. It shall prescribe the methods of accounting and through a committee of three of its members, to be known as a Committee on Auditing and Appropriations, shall audit all accounts of this Association. The Council shall adopt an annual budget providing for the necessary expenses of the Association for the following calendar year. This budget shall be prepared and presented for consideration in the last quarter of each year by the Committee on Auditing and Appropriations. A complete and detailed report shall be submitted to the component county medical societies as provided in Section 8, Chapter III. The Council shall submit an annual report to the House of Delegates which shall specify the character and cost of the publications of the Association, the amount and character of all its property, and shall provide full information concerning the management of all affairs of the Association which the Council is charged to administer.

Sec. 8. The Council shall appoint at least six months before the Annual Session, a committee consisting of three of its members to be known as the Committee on Arrangements for the Annual Session. On recommendation of the Committee, the Council shall appoint a general chairman of a Local Committee on Arrangements, who shall be a member of the component society of the county in which the Annual Session is to be held, and who shall appoint and organize from the members of this county society the personnel of the Local Committee on Arrangements. The Local Committee on Arrangements shall provide suitable meeting places and shall have general charge of all local arrangements subject to the approval of the Committee on Arrangements for the Annual Session. All receipts and disbursements related to the Annual Session shall be handled by the Committee on Arrangements on recommendations of the Committee on Budget and Appropriations.

Sec. 9. The Council shall by appointment fill any vacancy in office not otherwise provided for which may occur during the interval between Annual Sessions of the House of Delegates; the appointee shall serve until his successor has been elected and has qualified.

Sec. 10. The salaries of all employees of the Association shall be fixed by the Council.

Sec. 11. The Council shall provide such headquarters for the Association as may be required to conduct its business properly.

Sec. 12. The Council shall be empowered to elect an Executive Secretary and Assistant Executive Secretary and such other personnel as may be necessary, who need not be members of the Missouri State Medical Association, each of whom shall perform such duties as the Council may designate and receive such salary and serve for such periods and under such conditions as the Council may determine.

Chapter VII. Committees

Section 1. The Committees of the Association shall be standing committees and special committees.

Sec. 2. The standing committees, unless otherwise provided in these By-laws, shall consist of five members serving three year terms shall be:

A Committee on Scientific and Postgraduate Work.
A Committee on Publication.
A Committee on Medical Defense.
A Committee on Medical Education and Hospitals.
A Committee on Medical Economics.
A Committee on Cancer.
A Committee on Public Policy and Public Relations.
A Committee on Maternal Welfare.
A Committee on Infant Care.
A Committee on Mental Health.
A Committee on Constitution and By-laws.
A Committee on Health and Public Instruction (McAlester foundation).
A Committee on Control of Venereal Disease.
A Committee on Fractures.
A Committee on Conservation of Eyesight.
A Committee on Diabetes Mellitus.
A Committee on Anesthesiology.
A Committee on Hospital and Professional Relations.

The Committee on Scientific and Postgraduate Work shall consist of three members, of which the Secretary shall be one, and shall determine the character and scope of the scientific proceedings of the Association for each Annual Session subject to the instructions of the House of Delegates. The Committee shall provide speakers for district society meetings as requested.

The Committee on Publication shall include the Editor or Acting Editor. The Committee shall be appointed by the Council annually. The chairman shall be designated by the Council. It shall have referred to it all reports on scientific subjects and all scientific papers and discussions heard before the Association. It shall be empowered to curtail, abstract or reject papers and discussions. It shall arrange for the publication and distribution of The Journal.

The Committee on Defense shall, upon request accompanied by complete history of the case and copy of plaintiff's petition if filed, advise and aid any member in good standing who has had filed against him individually a civil malpractice suit and may recommend assistance in defraying costs to an amount not to exceed $300.00. The Association shall not be obligated to pay, nor shall it pay, either in whole or in part, any sum agreed upon in compromise, nor any judgment or part thereof, nor shall it pay any of the costs of taking depositions nor any court costs. No member shall be entitled to this defense should the charge of malpractice be brought jointly against him and a hospital or sanatorium in which he is, or at the time of the alleged malpractice was, financially interested.

The Committee on Medical Education and Hospitals shall serve in the state for the Council on Medical

Education and Hospitals of the American Medical Association and shall have referred to it all questions pertaining to hospitals and medical education.

The Committee on Medical Economics shall investigate matters affecting the economic status of medicine and shall report annually to the House of Delegates such recommendations as may, in its judgment, seem proper.

The Committee on Cancer shall investigate the facilities provided for the care of the cancer sufferer and for the study of cancer in the State of Missouri and shall cooperate with the American Society for the Control of Cancer and other ethical organizations for cancer control to the end that authentic information in regard to diagnosis and treatment of cancer be properly disseminated throughout the State of Missouri.

The Committee on Public Policy and Public Relations shall consist of the President and President-Elect of the Association, one elected member of the Council and two members of the Association at large appointed by the President. There shall be a joint meeting of this Committee and an auxiliary committee as provided for in Chapter XI, Section 10, of these By-laws, held annually, as may be ordered on the call of the chairman or three members of the State Committee. The chairman of the State Committee, and in his absence the President, shall act as chairman at the joint committee meetings. Under the direction of the State Committee, the joint committee shall represent the Association in promoting relations between the profession and the public, and in procuring public cooperation in the interests of public health and scientific medicine.

The Committee on Maternal Welfare shall keep in touch with and investigate matters concerning maternal and child welfare. It shall carry on activities in the field of maternal and child welfare and in cooperation with the Committee on Scientific and Postgraduate Work and the Division of Child Hygiene of the State Division of Health shall conduct postgraduate courses for the profession and disseminate information of an educational nature.

The Committee on Infant Care shall concern itself with the betterment of infant care and shall be a liaison with the Division of Child Hygiene of the State Division of Health.

The Committee on Mental Health shall engage in the promotion of good mental health, the prevention of mental ill health and lend its support toward securing cooperation of all state or governmental agencies in obtaining better treatment of the mentally ill. It shall cooperate with the Committee on Mental Health of the American Medical Association and with the Division of Mental Diseases of the State of Missouri.

The Committee on Constitution and By-laws shall propose such amendments to the Constitution and By-laws as are deemed wise and expedient, and bring before the House of Delegates such amendments as it or other members of the Association may present for consideration.

The Committee on Health and Public Instruction (McAlester Foundation) shall keep in touch with and investigate matters concerned with the public health and carry on such activities in the field of public health and the dissemination of information to lay groups in relation thereto as may be deemed appropriate; and shall cooperate with the Bureau of Health and Public Instruction of the American Medical Association and the Division of Health of the State of Missouri.

The Committee on Control of Venereal Disease shall review the available information on the venereal disease problem, assemble additional information concerning the nature and extent of the facilities which now exist for the diagnosis, recommend such supplemental and new state or local facilities and measures as seem desirable in dealing with these infections and to cooperate fully with the State Division of Health and the United States Public Health Service in carrying out such venereal disease programs as have been or may in the future be established.

The Committee on Fractures shall disseminate information regarding the current and approved methods of handling fractures and stimulate interest therein, such information to be disseminated to licensed practitioners of medicine and to lay groups approved by the Committee. It shall correlate its programs with those of the Committee on Scientific and Postgraduate Work. The chairman of the Committee shall have the right to appoint three junior members to work under his direction.

The Committee on Conservation of Eyesight shall promote and maintain an educational program in each Councilor District, before medical and lay audiences, relative to ocular hygiene, conservation of eyesight and prevention of blindness. It shall correlate its program with that of the Committee on Scientific and Postgraduate Work and the local, state and national associations or societies for the prevention of blindness. The Committee may have associate members as the Committee may deem advisable.

The Committee on Diabetes Mellitus shall keep in touch with and investigate matters concerned with diabetes mellitus and carry out such activities as may be deemed appropriate.

The Committee on Anesthesiology shall study matters concerned with anesthesiology and carry out such activities as may be deemed appropriate.

The Committee on Hospital and Professional Relations shall consider matters relating to the practice of medicine in hospitals.

Sec. 3. Special committees may be appointed by the President or the Council as circumstances may demand.

CHAPTER VIII. DUES AND ASSESSMENTS

Section 1. The annual dues of this Association shall be $15.00, which shall be applicable to each active member of the Association and shall be levied per capita on the active members of the component societies; the per capita levy for junior members shall be one half of the per capita levy for active members; honor and associate members shall not be required to pay dues. Dues shall be payable on January 1 of the year for which they are levied.

Sec. 2. One dollar of the annual dues shall be credited to the account of THE JOURNAL for each member's annual subscription. The remainder of the amount shall be credited to the general fund of the Association.

Sec. 3. The House of Delegates may, when in its judgment the best interest of the Association demands, recommend an assessment on each active member. Such assessment shall be levied only by consent of two thirds of the members of the House of Delegates present and voting. Funds obtained from such special assessments shall be allocated only for the purposes for which such assessment is levied and in accordance with substantiating budgets. Unexpended balances from such assessments must be reported to the House of Delegates for reallocation.

Sec. 4. The secretary of each component society shall cause to be collected and remitted to the Treasurer of this Association the per capita levies. Any member whose name has not been reported for enrollment and whose dues have not been remitted to the Treasurer of this Association on or before March 1 shall stand suspended until his name is properly reported and his dues for the current year are paid. On December 31 of each year, members delinquent in payment of dues, and assessment if such has been made, or any part thereof shall, ipso facto, forfeit their memberships.

No suspended member shall be eligible to register at an annual session.

Chapter IX. Rules of Conduct

The ethical principles governing the members of the American Medical Association shall govern members of this Association.

Chapter X. Rules of Order

The deliberations of this Association shall be conducted in accordance with parliamentary usage as defined in Robert's Rules of Order.

Chapter XI. County Societies

Section 1. All county societies now in affiliation with the State Association or those that may hereafter be organized in this state, which have adopted principles of organization not in conflict with this Constitution and By-laws shall, upon application to the Council, receive charters from this Association, provided that their Constitutions and By-laws shall have been submitted to the Council and received its approval.

Sec. 2. Only one component medical society shall be chartered in each county.

Sec. 3. Each county society shall judge of the qualifications of its members, subject to review and final decision by the Council of the State Association. Every reputable and legally qualified physician who does not practice, nor profess to practice sectarian medicine, and who resides or practices in the same county, who shall apply for membership on the prescribed form and subscribe for The Journal and pay the annual dues and assessments for the current year, shall be eligible for election to membership.

A member of a component society whose license has been revoked shall be dropped from membership automatically as of the date of revocation. The Council of the State Association shall have final authority to expel a member should a component county society fail to do so after being so requested by the Council.

The Council may upon request of a component society remit the state dues and assessment of a member who has become totally and permanently incapacitated through mental or physical disability and has been a member in good standing during the three consecutive years immediately preceding his disability; provided, that the component society shall remit the county society dues of such member.

The Council may, upon the request of a component society, waive the dues of any member in good standing for such a period as the member is serving in the Armed Forces of the United States of America, or similar service with any of the allies of the United States, and for six months thereafter.

A physician living near a county line may hold his membership in that county most convenient for him to attend, on permission of the component society in whose jurisdiction he resides.

Sec. 4. Any physician who may feel aggrieved by the action of the society of his county in suspending or expelling him shall have the right to appeal to the Council whose decision shall be final. A county society shall at all times be permitted to appeal or refer questions involving membership to the Council of the State Association for final determination.

Sec. 5. In hearing appeals the Council may admit oral or written evidence or both as in its judgment will most fairly present the facts.

Sec. 6. When a member in good standing in a component county society moves to another county in this state, he shall be given a written certificate of these facts by the secretary of his society, without cost, for transmission to the secretary of the society in the county to which he moves. Pending his acceptance or rejection by the society in the county to which he moves such member shall be considered to be in good standing in the county society from which he was certified and in the State Association to the end of the period for which his dues have been paid.

A member of a component society who moves to and engages in the practice of medicine at a location in another county in which there is a component society shall forfeit his membership in this Association and the Secretary shall remove his name from the roster of members of the Missouri State Medical Association unless within one year after such change of residence he becomes a member of the component society in the county to which he has moved.

Sec. 7. Each county society shall have general direction of the affairs of the profession in the county, and its influence shall be constantly exerted for bettering the scientific, moral and material condition of every physician in the county. Systematic efforts shall be made by each member, and by the society as a whole, to increase the membership until it includes every eligible physician in the county.

Sec. 8. At some meeting in advance of the Annual Session of this Association, each component county society shall elect one or more delegates and an equal number of corresponding alternates therefor to represent it in the House of Delegates of this Association, in accordance with Chapter III, Section 2, of these By-laws. The secretary of each county society shall send a list of such delegates and alternates to the Secretary of this Association at least thirty days before the Annual Session. Representation in the House of Delegates shall be contingent on compliance with the foregoing provisions.

Sec. 9. The secretary of each county society shall keep a roster of its members and, if practicable, a list of non-affiliated physicians, in which shall be shown the full name, address, college and date of graduation, date of license to practice in this state, and such other information as may be deemed necessary by the Council. He shall send a copy of the program of each meeting to his district councilor and to the Secretary of the State Association.

Sec. 10. Each county society shall appoint or elect one of its members as a member of the auxiliary committee on Public Policy and Public Relations, and the county society secretary shall send his name and address to the Secretary of this Association. The Committee on Public Policy and Public Relations of this Association shall formulate the duties of the auxiliary committee and supply each member with a copy. The auxiliary committeemen shall be accountable to their county societies and to the Council for prompt response to and continued cooperation with the Committee on Public Policy and Public Relations of this Association.

Sec. 11. Any county component society, in a manner approved by the State Association, or the State Association with the consent of the county society or societies affected, may undertake, organize and put into effect plans for the medical care of indigent persons or indigent groups, and low income groups, by agreements with physicians, public officials or others and by the use of contributions, cooperative funds or other means; provided, however, that a free choice of the available and participating physicians in that territory shall be allowed to the patient and that all relationships, legal or otherwise, between the physician and the patient shall be and remain as though it were strictly an individual employment.

Chapter XII. Amendments

Section 1. These By-laws may be amended at any Annual Session by a two thirds vote of the delegates present and voting at that session, if the proposed amendment has been properly submitted to the House of Delegates and has laid on the table for one day.

Sec. 2. Upon the adoption of this Constitution and

these By-laws all previous constitutions and by-laws are thereby repealed.

DURWARD G. HALL, Chairman
HUBERT M. PARKER
CURTIS H. LOHR
W. L. ALLEE
PAUL BALDWIN

The report of the Committee on Fractures, Daniel L. Yancey, M.D., Springfield, Chairman, follows:

REPORT OF THE COMMITTEE ON FRACTURES

At the last annual meeting of the Missouri State Medical Association in Kansas City, the Committee on Fractures, in conjunction with the Missouri Regional Committee on Trauma of the American College of Surgeons, had a display booth entitled, "An Introduction to Fractures," in which "Fundamental Principles in Fracture Treatment," "Emergency Treatment for Transportation," and "The Plaster of Paris Dressing" were stressed. Considerable interest was manifested in the exhibit, however, due to the poor location it was not seen by a large number of those visiting the exhibits.

The last meeting of the Committee was held on November 13, 1951, at the University Club in St. Louis, in a joint session with the Missouri Regional Committee on Trauma of the American College of Surgeons and the following proposed activities for the Committees were outlined:

1. Arrange with the Chairman of the Program Committee of each County Medical Society for at least one program each year on first aid to the injured, to include:

a. Immediate application of sterile dressings to wounds.

b. Insure air-way in maxillofacial injuries.

c. Emergency splinting of long bones, especially in the lower extremities.

d. Transportation of neck and spinal injuries.

e. Do's and don'ts on head injuries.

2. Arrange with the Chief of Staff of each hospital for the same type of program for at least one staff meeting each year.

3. Contact each source of ambulance service and explain the objectives to improve equipment and personnel of those who first see the injured patient.

4. Emphasize importance of including management of trauma in teaching programs of hospitals approved for graduate training.

5. Continue the exhibit on First Aid to the Injured at the meeting of the Missouri State Medical Association annually.

6. Pursue efforts toward proper equipment of all state, county and city patrol cars and training of personnel in first aid work.

The Committee requests the cooperation of each doctor and each hospital in the State of Missouri in carrying out this program. With the fullest cooperation of all concerned there is no doubt but that the mortality and morbidity resulting from accidents in this state can be reduced.

DANIEL L. YANCEY, Chairman,
W. J. STEWART,
N. S. PICKARD,
W. R. BOHNE,
FRED REYNOLDS,
JACOB KULOWSKI,
B. L. MURPHY.

The report of the Committee on Conservation of Eyesight, C. Souter Smith, M.D., Springfield, Chairman, follows:

REPORT OF THE COMMITTEE ON CONSERVATION OF EYESIGHT

A survey of the use made of the charts for testing vision of school children, which were distributed to all schools in the state in the fall of 1950, has not been completed but the Committee expects to have these figures, possibly by the time of the Annual Session. Recommendations on this phase of work will await the outcome of the survey being made. In the meantime, the Committee is attempting to direct work in some Diocesan schools in St. Louis which will give a sample survey of what might be expected in schools. The Committee is still active in its interest in the improvement of the vision of school children.

The Committee has worked closely with the Bureau for the Blind of the State of Missouri during the year and has kept conversant with the use of federal funds which have been added to state funds for the financial aid given the blind.

The Committee has furnished several speakers during the year on eye subjects for county society and councilor district meetings. The Committee is sponsoring a motion picture during the Annual Session on "Glaucoma: What the General Practitioner Should Know," produced by the National Society for the Prevention of Blindness.

To further education on glaucoma as the greatest cause of blindness in Missouri, the Committee will suggest to the Woman's Auxiliary of the Association that they use the title "Glaucoma: Missouri's Leading Cause of Blindness" as the title of the essay contest for 1952.

Reporting of visual disabilities has been discussed by the Committee and the Committee is keeping in touch with the results in other states which have such legislation. The Committee feels that it is not timely to sponsor such legislation in Missouri at present but is continuing its study.

C. SOUTER SMITH, Chairman,
W. L. POST,
A. N. LEMOINE,
H. B. STAUFFER,
ROBERT S. MINTON,
ROBERT MATTIS,
JOHN MCLEOD,
G. J. TYGETT,
GEORGE HORNBACK,
C. H. BRADY.

The report of the Committee on Control of Venereal Disease, A. W. Neilson, M.D., St. Louis, follows:

REPORT OF THE COMMITTEE ON CONTROL OF VENEREAL DISEASE

Several meetings of the Committee have been held during the last year. The Committee has unanimously approved of a plan for the future handling of venereal disease in Missouri. Reasons for changing the program for control of venereal disease in Missouri are as follows:

A NEW APPROACH TO VENEREAL DISEASE CONTROL

Treatment of the venereal diseases is an impotrant element in their control because treatment quickly reduces infectivity, thus impeding further spread. It is for this reason, plus the considerable cost of older treatment methods, that health departments have for several years maintained diagnostic and treatment clinics for medically indigent venereal disease patients. Contact investigations and patient education are also essential to successful venereal disease control.

Practicing physicians have been encouraged to participate in the venereal disease eradication program. Laboratory diagnostic services, free drugs and follow-up services have been available to them in Missouri

for many years. Because of the prevailing feeling toward the venereal diseases, however, a close and effective working relationship between the practicing physician and the health department has seldom been attained.

With the advent of intensive arsene-therapy for early syphilis it became possible to treat infectious cases of syphilis more quickly, increase the number of patients who completed treatment and thus reduce the follow-up of patients who lapsed from treatment. Intensive or rapid treatment required hospitalization and rapid treatment centers were established to meet this need. In Missouri the first such center was opened at Monett in 1942. The year following, the Midwestern Medical Center was established at the old Marine Hospital in St. Louis and the Monett Center was closed.

The introduction and availability of penicillin for the treatment of syphilis about 1945 made it possible to give rapid therapy to all types of syphilis. Hospitalization was still necessary because penicillin had to be given several times daily, around the clock, for several days. Rapid treatment centers were then considered an essential part of a good venereal disease control program.

A few years following this era, prolonged action penicillin appeared in the form of penicillin in oil with beeswax (P.O.B.) and later in its present form, procaine penicillin in oil and 2 per cent aluminum monostearate. It soon became apparent that treatment every two or three hours was not necessary with the new form of penicillin and that patients could be successfully treated on an ambulatory basis.

The Midwestern Medical Center has played a vital and effective role in Missouri's venereal disease control program. It has served as a focal point for expert diagnostic and treatment services and as a training center for physicians, nurses and others. It has been the chief source of contact information and has been active in patient education. In addition to these routine functions, the Center has actively participated in nation wide evaluations of treatment schedules. During the last year, however, its patient day census has fallen to a point where the cost per patient is relatively high. The high cost of in-patient care and the fact that ambulatory treatment is now satisfactory make it necessary to anticipate closure of the Center.

Since most public clinics and many physicians have for several years referred their syphilis patients to the Midwestern Medical Center, the art of diagnosis, treatment, contact interviewing and patient education has declined in the local community. There must be a strengthening of these activities on the part of both health departments and practicing physicians if effective control is to be carried on at the local level. Although treatment has been simplified, syphilis still requires, in general, three injections a week, and this schedule puts a burden on small under-staffed health departments. The apparent marked decline in syphilis in Missouri (11,500 reported in 1946 vs. 5,700 in 1951) brings up the question of economy of clinic operation. A clinic with low attendance could be extremely expensive on a per patient basis.

With these considerations in mind, the Venereal Disease Control Committee, in collaboration with representatives of the Missouri Division of Health, has devised a venereal disease control program deemed to be practical, economical, effective and to the best interests of the public, physicians and health departments. The essential elements in the plan are as follows:

1. The plan envisions the closure of the Midwestern Medical Center, probably about June 30, 1952.

2. Practicing physicians will be paid a modest fee for the treatment of venereal disease patients who, in the judgment of the physician, are unable to pay for treatment. Penicillin will also be supplied to physicians.

3. All patients for whom payment is to be made are to be interviewed by a representative (public health nurse or venereal disease investigator) of the local health department for purposes of epidemiologic investigations.

4. The plan will not be in effect in communities where, because of adequate facilities and a relatively high venereal disease prevalence, clinic services are maintained.

This program will be administered by the Missouri Division of Health through local health departments, district offices and county nursing services. Physicians who have occasion to participate in this plan may secure further details from local public health representatives or from the Division of Health.

Much progress has been made in venereal disease control in recent years but much remains to be accomplished. A continued alertness to, and interest in, the venereal diseases by practicing physicians will further improve the picture. Physicians represent the first line of defense.

The Committee plans to sponsor a series of scientific articles for The Journal on latest diagnostic and treatment methods in venereal disease problems. It is also planned to develop scientific programs which can be presented at the various county and district medical society meetings.

A. W. Neilson, Chairman,
J. G. Siceluff,
James C. Cofer,
Charles C. Dennie,
E. M. Cannon.

The report of the Committee on Industrial Health, R. A. Sutter, M.D., St. Louis, Chairman, follows:

REPORT OF THE COMMITTEE ON INDUSTRIAL HEALTH

The Committee met on September 24 in St. Louis. Dr. J. F. McCahan of the American Medical Association Council on Industrial Health was present.

A discussion was held regarding a pamphlet "Standing Orders for Industrial Nurses." Dr. McCahan advised the Committee that the American Medical Association is preparing a reference pamphlet on this subject.

Representatives of the State Division of Health reported that the Division is in process of preparing a new manual on control of communicable and other diseases. The Committee was asked to assist in the preparation of a more simplified list of occupational diseases and causes of death for reporting purposes.

The Committee agreed to assist in this work. However, the report was not complete in time for inclusion in this report. If it is completed by the time of the meeting of the House of Delegates, it will then be reported to the House.

Richard A. Sutter, Chairman,
H. M. Roebber,
A. M. Ziegler,
V. T. Williams,
E. M. Fessenden,
Vencel W. Hollo.

The report of the Committee on Anesthesiology, C. R. McCubbin, M.D., Kansas City, Chairman, follows:

REPORT OF THE COMMITTEE ON ANESTHESIOLOGY

The activity of this Committee continued closely allied with the various committees of the Missouri State Society of Anesthesiologists. Efforts have been directed to aid the part time anesthetist to secure further study with the newer agents and technics.

Continued work in obtaining full time anesthesiolo-

gists in needy areas has resulted in the addition of at least six new men in Missouri. This enlarges the scope of available centers of postgraduate study for men of the state who so desire the additional training. Invitations for this study are continually being extended to these men who do part time anesthesia.

Evidence of healthy expansion is shown by the progressive climb in enrollment of the Missouri State Society of Anesthesiologists and of the two local societies of St. Louis and Kansas City.

Plans for the next year include the continuation of these activities, as well as a concerted effort to work with the Public Relations Committee in acquainting the public with the private practice of anesthesiology.

C. R. McCUBBIN, Chairman,
CARL K. NESS,
H. J. FREIHEIT,
JOSEPH A. McNEARNEY,
O. B. CRAWFORD.

The report of the Committee on Tuberculosis, Paul Murphy, M.D., St. Louis, Chairman, follows:

REPORT OF THE COMMITTEE ON TUBERCULOSIS

The Committee met February 13, in Jefferson City. Those present were Drs. Paul Murphy, St. Louis, Chairman; F. E. MacInnis, Kansas City; L. E. Wood, Kansas City; H. L. Greene, Hannibal; J. L. Mudd, St. Louis; Buford G. Hamilton, Director State Division of Health; H. S. Miller, State Division of Health; Mr. Don Pratt and Mr. W. Hartnett of the Missouri Tuberculosis Association and Mr. T. R. O'Brien.

The Committee was advised that Dr. H. S. Miller, of the State Division of Health, and presently in charge of Tuberculosis control in the state, is leaving, effective March 1, 1952.

Dr. Miller reviewed the history of tuberculosis control in the state from 1944 when a special section was established within the State Division of Health, up to the present time. He reported that 327,000 persons had had chest x-rays during the last fifty-six months, and that this number would have been greater if the necessary equipment and personnel had been available. He reviewed the transfer of the State Sanitorium at Mt. Vernon from the old Eleemosynary Board to the Division of Health. The program of Rehabilitation, established at the State Sanitorium in 1946, was discussed.

Dr. Miller suggested that the Committee consider the following plans for future activities of the Section on Tuberculosis control:

(a). Better reporting.

(b). Routine x-ray screening at general hospitals.

(c). Limitations of present program because of lack of equipment.

(d). Increased appropriations for central office control.

Dr. Hamilton asked the Committee to consider whether it might be less expensive to use commercial x-ray screening facilities rather than the continued use of state owned equipment.

The Committee agreed that the various points brought out by Drs. Hamilton and Miller would be considered at a later time. The Committee was advised that Dr. E. A. Belden, Communicable Disease Director, will, for the time being, handle the additional duties of tuberculosis control. After discussion, the following motion was passed:

The Committee is pleased that Dr. Belden will handle this assignment, however, it is recognized that tuberculosis control in Missouri is sufficiently important to require the full time service of a public health officer. Therefore, the Division of Health is urged to make every effort to secure the services of a full time physician for the Section on Tuberculosis Control.

The need for additional funds for tuberculosis control, as well as other public health services, was presented to the Committee. After discussion, it was recommended that the Division of Health furnish complete information to the Committee relative to the appropriations provided by state and federal funds.

PAUL MURPHY, Chairman,
I. J. FLANCE,
E. E. GLENN,
LAWRENCE E. WOOD,
J. L. MUDD,
C. A. BRASHEAR,
W. P. McDONALD,
F. E. MacINNIS,
H. L. GREENE.

The report of the Committee on Hospital and Professional Relations, Paul N. Johnstone, M.D., Kansas City, Chairman, follows:

REPORT OF COMMITTEE ON HOSPITAL AND PROFESSIONAL RELATIONS

During the last year this Committee has been primarily concerned with actually developing a means of periodic consultation with representatives of the Missouri State Hospital and State Nursing Associations. Such consultations were found to be mutually desirable.

As a result of joint efforts by representatives of the State Medical, Hospital and Nursing associations, the joint Conference for the Improvement of Patient Care has been developed during the last year, though it was originated during the latter part of the preceding year.

This new organization now functions satisfactorily, meets at stated intervals and provides a place where mutual problems can be discussed.

It is believed that the Joint Conference represents a fine new addition for the Improvement of Patient Care in Missouri.

PAUL N. JOHNSTONE, Chairman,
JOSEPH L. FISHER,
C. G. STAUFFACHER,
STANLEY S. PETERSON,
HOLLIS ALLEN.

The report of the Committee on Physical Medicine, C. Stewart Gillmor, M.D., Kansas City, Chairman, follows:

REPORT OF THE COMMITTEE ON PHYSICAL MEDICINE

There has been no group meeting of this Committee the last year, but the members have consulted with one another by correspondence and by long distance telephone.

It seems important that the doctors attending the annual meeting of the Association be given the opportunity of viewing some of the treatment offered in physical and vocational therapy.

Dr. W. Elliott O'Reilly, of St. Louis University, and Dr. Sedgwick Mead, of Washington University, have asked the physical therapy departments of their respective medical schools to set up exhibits. The Rehabilitation Institute of Kansas City is sending their display and the exhibit of the Kansas City Arthritis and Rheumatism Clinic will be shown.

It is felt that seeing the manner in which this therapy can be done in the office and home, as well as in the established departments of hospitals and clinics, will be of benefit to doctors.

C. STEWART GILLMOR, Chairman,
LUKE A. KNESE,
A. J. KOTKIS,
J. L. WASHBURN,
EMMETT SETTLE.

The report of the Committee on Alcoholism, Ralph E. Duncan, M.D., Kansas City, Chairman, follows:

REPORT OF COMMITTEE ON ALCOHOLISM

This Committee is acting as an advisory committee appointed by the President in accordance with the resolution adopted by the House of Delegates at the 1951 session. The Committee was appointed June 28, 1951. The Chairman contacted all members by phone, visited with three of the members in their own city within the months of July and August and it was agreed that reference material be gathered and studied before a meeting of the Committee be held and work policy adopted.

A large amount of reference material has been accumulated by the Committee including: (1) Reports of two active committees in other states; namely, the Western New York Committee for Education on Alcoholism Inc., The Texas State Medical Association's committee on Study of Alcoholism 1950 and 1951. (2) The Prepared General Statement and Estimate of the Problems of Alcoholism from the Report of Committee on Chronic Diseases at the Atlantic City Session of the American Medical Association, June 1951, and the Report of the Subcommittee (on the Problems of Alcoholism) of the Chronic Disease Committee of the American Medical Association, submitted to and approved by the House of Delegates during their Atlantic City Session, June 1951. (3) On a Missouri level the 1950 Report of the Citizens' Committee on Alcoholism of Kansas City, insofar as it affected Kansas City, the second largest municipality in the state.

The first meeting of the Committee was held on January 22, 1952, in the offices of the Director of Missouri Department of Health and at the Governor Hotel, Jefferson City. All members of the Committee were present.

It was agreed that with the great amount of education and rehabilitation work being done on alcoholism, that the medical profession is obligated to keep abreast of the times; the medical profession of Missouri must not lay themselves open to criticism that alcoholism is another illness of man that Missouri medicine has neglected and that had best be taken over by the social planners.

Buford G. Hamilton, M.D., State Health Director, assured the Committee cooperation of his department and that he would urge the department's section on Mental Health, headed by Henry V. Guhleman, Jr., M.D., to explore the extent and degree of chronic alcoholism in Missouri.

Dr. Coffelt submitted a resolution adopted by the Greene County Medical Society, setting out its desire to establish and activate a program in Greene County. Dr. Coffelt reported that he had addressed the Springfield Alcoholics Anonymous group and submitted an excellent article that had been prepared on the meeting and published in a Springfield magazine.

Dr. Kendis enumerated some of his activities with the members of the St. Louis County Medical Society and expressed the desire to promote the educational aspect of the problem.

Dr. Smith reported a 30 minute interview with Governor Smith about the problem of alcoholism in Missouri and expressed the opinion that the Governor was much interested in the problem as it affected the citizens of Missouri and would cooperate with the Committee's program when his participation would be definitely beneficial.

All members of the Committee agreed that from their study of the problem to date that the prepared statement and estimate of the problems of alcoholism as presented to the American Medical Association 1951 Atlantic City Session, should form the basis of future work and further that the aims of the subcommittee (on the Problems of Alcoholism) of the Chronic Disease Committee of the American Medical Association should be adopted as Missouri State Medical Association future working platform; namely, the aims of the sub-committee modified for the Missouri State Medical Association Committee's work will be as follows:

1. To stimulate in every constituent county medical society and the State Health Department plans for activity on the medical aspects of the problem.
2. To coordinate the activities of the county medical societies on this problem.
3. To encourage passage of new constructive legislation and revision of antiquated laws concerning this problem.
4. To work cooperatively with interested nonmedical groups.
5. To encourage approved general hospitals to accept alcoholic patients in the acute stage as medical emergencies.
6. To encourage insurance companies to recognize chronic alcoholism as a disease.
7. To encourage study of the epidemiology, diagnosis and treatment of the disease.
8. To encourage use of uniform definition of terms.
9. To stimulate presentation of formal courses on this problem in schools of medicine, nursing, social work, law and graduate and undergraduate colleges.
10. To encourage research.

During November the Executive office of the Missouri State Medical Association sent to all secretaries of the component county societies, at the suggestion of the Committee, a letter requesting an opinion in reference to a work program for the Committee and a summary of facts on alcoholism in Missouri. A number of replies were received, but it was evident to the Committee that the response definitely indicated that considerable educational work was needed within our organization if any of the aims as set out by the National Committee and modified by this Committee were to be activated.

The Committee agreed that in the next few months, prior to the 1952 session of the Association in St. Louis, that each member should promote as much interest as possible in his own county medical society and that the Committee forward to each county medical society and leader in the Association's program, a copy of the American Medical Association's Committee on Chronic Disease, Prepared Statement and Estimate of the Problems of Alcoholism, and the Aims of the Missouri State Medical Association Committee as adopted at this, their first formal meeting.

Dr. Forman suggested that the Committee make some definite recommendations to the Council of the Missouri State Medical Association as to the future existence and work of the Committee on Alcoholism. The Committee agreed to make the following recommendations to the Council of the Missouri State Medical Association.

1. The Council recommend to the House of Delegates at its coming meeting in St. Louis that:

a. The Committee on Alcoholism be continued.

b. The aims of the Committee be approved as outlined in this report and be classified as follows under three general functions, namely:

1. Education of hospital staff, medical students, state and county medical societies.

2. Rehabilitation, the coordination of present treatment processes and promoting additional demonstration centers.

3. Research, promote scientific medical investigation into all areas of the problem.

c. The services of the Executive Office of the Association be made available to enhance the Committee's work.

d. Provide the Committee with use of space in The Journal of the Missouri State Medical Association to

promote its work with the component county medical societies.

e. One or more members of the Committee be sent to attend the annual meeting of the National Conference on Alcoholism sponsored by the subcommittee (on Problems of Alcoholism) of Chronic Disease of the American Medical Association.

f. Funds be provided for in the budget to aid the Committee's program with the component county medical societies of the Association.

RALPH EMERSON DUNCAN, Chairman,
KENNETH C. COFFELT,
GEORGE W. FORMAN,
JOSEPH B. KENDIS,
S. D. SMITH.

The report of the Committee on Rural Medical Service, A. E. Spelman, M.D., Smithville, Chairman, follows:

REPORT OF THE COMMITTEE ON RURAL MEDICAL SERVICE

This Committee has held two week end meetings since the last Annual Session. Two full days' discussion on each occasion focused attention on certain major health and medical care problems in the state with which this Committee might well concern itself at this particular time. These problems are:

1. Assisting communities to secure doctors where need can be shown. This poses a larger problem than appears on the surface at first glance. Just how effective is the medical care in rural Missouri today? The Committee recognizes that there is an inadequate number of doctors in rural Missouri but where and what is the inadequacy? Even though a small town has no resident physician does that in itself indicate unavailable medical care? Can we say that two similar communities with the same number of doctors receive or have available equal quality and quantity of medical services? One reads in the press that certain counties in rural Missouri have two, three or more thousands of people per physician. Does that mean that country people would not think of crossing county lines to get their medical care? Is there much validity in judging medical care availability on the sole basis of so many people per doctor? To answer some of these questions so that some semblance of practicality can be used in attempts to place physicians, the Committee is embarking on an extensive survey of rural Missouri to determine, as near as possible, how effective care is there and the reasons for or against. One important thing this will entail will be to catalogue all physicians in rural Missouri as to location, age, full time or part time practice, limited practice, making night calls, handling obstetrics and other limiting factors. With facts of this nature on hand, the Committee feels it will be on much firmer ground in advising physicians on locations and locations concerning physicians.

2. Better coverage of Blue Cross and Blue Shield contracts to rural people. Numerous complaints have reached the Committee pointing up the inability of country people to get coverage because it is not available to them. Many of these people do not belong to groups with which Blue Cross and Blue Shield have contract arrangements. The Committee has asked for a joint meeting with representatives of the four plans in Missouri to discuss this entire matter. Favorable replies have been received and plans for the meeting this spring are underway.

3. Indigent medical, hospital and dental care. The Committee feels that the county plans, for the most part, in this state are archaic, from the standpoint of handling, financially and otherwise, this problem of indigent medical, hospital and dental care. The survey of the extent of this problem to be made in Missouri by the Missouri Health Council in the near future will be followed with much interest. The chairman of the Rural Medical Service Committee has been appointed on the eighteen member advisory survey committee to the Missouri Health Council. Dr. C. E. Lively, Head of the Department of Rural Sociology, University of Missouri, will head the survey.

4. County Health Units. The Council of the Association has requested this Committee to study a sampling of Missouri County health units and to make recommendations to the Council as to an official position that the State Association might well take toward improving such units. The Committee has assigned specific units to various members of the Committee for their personal attention. This project will be carried out during the spring months.

5. Health Councils. The Committee believes the local voluntary health council, composed of people representing local organizations interested in improving community health is a potent vehicle for molding public opinion in developing programs to solve local health problems. The effectiveness of local health councils depends a great deal upon the active interest and guidance efforts shown by the local doctors. The Committee strongly urges the doctors in Missouri to familiarize themselves with basic purposes and potentialities of health councils and to take an active interest in any such local development.

The chairman of this Committee has had the honor of representing the Committee on a number of occasions, some of which follow: Meeting on Physician Placement, October 12, Chicago, Illinois, called by the American Medical Association to discuss State Medical Association activities in respect to locating physicians; September 26, program of The Missouri Health Council's state wide meeting on Indigent Medical, Hospital and Dental care; August 2, meeting of Advisory Rural Health Committee to Dr. Buford Hamilton, Director, Missouri Division of Health; Program of Annual National Rural Health Conference of the American Medical Association, Denver, Colorado, February 28.

Two new county hospitals with Hill-Burton federal aid are under construction, one in Sullivan County at Milan and the other in Lincoln County at Troy. The Audrain County Hospital at Mexico will be expanded soon by virtue of a $500,000 county bond issue and an equal amount of Hill-Burton federal money.

The physicians placement service in the office of the Association has, and is, functioning in creditable fashion. Many physicians have been aided in finding a suitable location in the state through contact with the Bureau, and even greater service is anticipated following this Committee's survey of medical manpower in rural Missouri.

A. E. SPELMAN, Chairman,
R. W. KENNEDY,
W. A. BROYLES,
W. J. SHAW,
R. B. WRAY,
MARTIN M. HART,
A. S. BRISTOW,
M. B. CASEBOLT.

DR. SPELMAN: Since the publication of this report, the Committee has met and asked that we supplement it. It is to urge the doctors in Missouri to familiarize themselves with the basic purpose and potentialities of Health Councils and take an active interest in any such local development. The Committee asks that the House consider initiating the following program of procedure for securing an interest and an active cooperation of rural doctors in local health council movements.

1. The Association President request that each District Councilor to discuss with and urge county medical societies to aid in the development of local health councils.

2. Each District Councilor make personal contact with the doctor or doctors in localities where district health councils are under consideration.

3. Following the approval of the local doctor and his acceptance of the idea of taking part in the activities of the health council, the section on education in the state department of health will be asked to send representatives to discuss the matter with local organizations interested in health matters (Farm Bureau, Parent Teachers' Association, Missouri Farm Association, Red Cross, Tuberculosis Association and interested responsible citizens). The Department of Health with representatives of the State Health Council will initiate the activation of local health councils with the local doctor as an interested participant.

The report of the Council, Victor B. Buhler, M.D., Kansas City, Chairman, follows:

REPORT OF THE COUNCIL

The Council met at the Sheraton Hotel, St. Louis, June 23-24, 1951, with Victor B. Buhler, M.D., Kansas City, Chairman, presiding.

Those present were Drs. Donald M. Dowell, Chillicothe; W. F. Francka, Hannibal; Armand D. Fries, St. Louis; J. F. Jolley, Mexico; R. W. Kennedy, Marshall; Victor B. Buhler, Kansas City; W. S. Sewell, Springfield; E. C. Bohrer, West Plains; Frank W. Hall, Cape Girardeau; C. Edgar Virden, Kansas City; J. W. Thompson, St. Louis; H. E. Petersen, St. Joseph; C. E. Hyndman, St. Louis; Victor E. Scherman, St. Louis; R. E. Schlueter, St. Louis; Robert Mueller, St. Louis; Messrs. John Noble and Lawrence Bradley, Kennett; D. E. Caywood, Springfield; Lemoine Skinner, Raymond McIntyre, T. R. O'Brien, St. Louis.

SOCIETY FOR MEDICAL RESEARCH

Upon motion of Dr. Petersen, it was voted to contribute again to the Society for Medical Research in the amount of $50.00.

CONFERENCE ON PHYSICIANS AND SCHOOLS

Mr. O'Brien presented material from the Bureau of Health Education of the A. M. A. concerning the third annual Conference on Physicians and Schools which will be held at Highland Park, Ill., November 6, 7, 8. It was pointed out in discussion by Drs. Kennedy, Virden, Petersen and Mr. McIntyre that the health of school children in rural areas does not have sufficient attention, that this is a problem not only of the medical profession but of the Division of Health and the Department of Education and that a program should be correlated through these three organizations. Upon motion of Dr. Petersen, it was decided to refer this information to the Committee on Infant Care, suggesting that they invite the educational authorities, the state teachers' group and Dr. Hamilton for an orientation meeting. It was agreed that Mr. McIntyre and a physician should attend the conference.

AUDRAIN COUNTY HOSPITAL SUIT

Mr. Bradley and Mr. Noble reviewed the Audrain County Hospital suit. They said that it had been requested that the case be heard by the entire Supreme Court and that it was on the banc docket and would come up the last of September or first part of October.

LEGISLATION

Mr. O'Brien gave the status of state legislation which affects the practice of medicine. On the national scope, Mr. O'Brien said that the bill on aid to medical education would be approved by the A. M. A. to the extent of one time grants for construction purposes only.

TREASURER'S REPORT

Dr. Hyndman reported that the finances of the Association were in fair condition and that the assessment was being sent in by component society secretaries and treasurers. His report was accepted.

ASSESSMENT

Clarification of the assessment was asked and after discussion, upon motion of Dr. Bohrer, it was voted that honor members, junior members and men in the armed forces be excused from the payment of the assessment.

ADVISORY COMMITTEE TO S.S.S.

Dr. Mueller gave a brief report on the work of the Advisory Committee to the Selective Service System and said he was available to answer questions of individual Councilors.

RED CROSS BLOOD DONOR CENTER

Dr. Carl V. Moore, St. Louis, explained the desire of the St. Louis Regional Red Cross Blood Donor Center to furnish iron tablets to blood donors. He said that the Council of the St. Louis Medical Society had approved the plan and wished permission of the Council to secure permission of county medical societies to carry out the plan in the state. He said the plan was used during World War II and was inaugurated because some donors cannot repeat donations because of lowered hemoglobin. Upon motion of Dr. Thompson, approval was given the plan.

BLOOD FOR KOREA DAY

A letter from the New York State Medical Society enclosing the following resolution was read:

"Whereas, There is a need for whole blood for our Armed Forces in Korea; therefore, be it hereby

"*Resolved*, That each county medical society in New York State designate a day in the near future to be called 'Blood for Korea Day'; and be it

"*Resolved*, That on that day the members of the component county medical societies be called upon to donate a pint of blood to the Red Cross; and be it further

"*Resolved*, That other state medical societies be advised of this action, and invited to join in this demonstration of the desire of the medical profession to help our nation, our people, and our Armed Forces."

Dr. Moore's opinion was asked concerning the resolution of the New York State Medical Society. Dr. Moore felt that it would be a good influence but pointed out that it would not be guaranteed that blood given would go to Korea, that other demands had to be met as well. It was suggested that "Blood for Defense Day" be used. Upon motion of Dr. Thompson, it was voted to approve a program of blood donor recruitment, with matters of publicity in cooperation with the Red Cross, with Regional Centers taking the lead and each county medical society adopting its own plan of procedure.

REPORT OF FIELD SECRETARY

Mr. McIntyre reviewed the postgraduate work that had been done since the last Council session. He re-

ported on several allied meetings including the Missouri Health Council, the Missouri Academy of General Practice, the Missouri Social Welfare Society and a Conference on Children and Health.

STATE FAIR EXHIBIT

Mr. McIntyre reported that the A. M. A. would furnish an exhibit for the Missouri State Fair again this year. He said also that Dr. Hungate had asked about sponsoring an exhibit on Civilian Defense at the Fair, and upon checking costs it would be near a thousand dollars. After discussion in which it was brought out that the medical phase was only one part of Civilian Defense and that state agencies should take the principal responsibility of such an exhibit, upon motion of Dr. Francka, it was voted that the Association assume obligation up to $100 toward the exhibit.

CARE OF THE INDIGENT

Mr. McIntyre reported that a conference had been called by the Missouri Health Council for September 19 at Jefferson City for discussion of the problems of general medicine, hospital and dental care of the indigent. The conference will consist of formal presentations in the morning and a general discussion group in the afternoon. This led to a discussion of the relief rolls of the state and the part medicine can or should play. It was decided that there should be good medical representation at the conference.

FALL MEETINGS

Mr. McIntyre said that the Missouri Academy of General Practice would hold a series of meetings this fall, similar to those of last year, and that these would be arranged so as not to conflict with Councilor District meetings.

COUNCILOR DISTRICT MEETINGS

Mr. McIntyre asked the opinion of the Council on Sunday Councilor District meetings, the possibility of wet clinics and clinical pathologic conferences. Opinion was divided and it was left to Mr. McIntyre to work out with individual Councilors.

COMMITTEE ON RURAL MEDICAL SERVICE

Dr. Kennedy explained the new committee on Rural Medical Service of which Dr. A. E. Spelman, Smithville, is Chairman. He said there would be a meeting, probably on July 14 and 15, at which the Committee would discuss the possibilities and scope of its work, considering Health Councils, number of physicians in rural Missouri, the new law concerning county health centers and Blue Cross and Blue Shield in rural Missouri.

FUND FOR MEDICAL EDUCATION

Mr. O'Brien presented material from the A. M. A. concerning the American Medical Education Foundation and the newly established Fund for Medical Education including a letter from Dr. Donald G. Anderson urging state associations to encourage members to support the fund. After discussion of medical education and its problems of financing, upon motion of Dr. Petersen, it was voted that the Council recommend to its members through THE JOURNAL that they support the fund.

MINNESOTA PLAN OF APPROVING INSURANCE COMPANIES

Mr. O'Brien presented material on a plan of the Minnesota Association on approving insurance plans for prepayment of medical, hospital and surgical care. The Association appointed a committee of nine physicians and three insurance men to work out a questionnaire, minimum requirements and schedule of fees for presentation to insurance companies, asking them to submit any policy they had which met with the minimum requirements set up by the committee. This material will be made available to members. The material has just gone to insurance companies and it was decided to wait for further information from Minnesota before any action is taken.

CONFERENCE FOR IMPROVEMENT OF CARE OF PATIENT

Dr. Paul N. Johnstone, Kansas City, reported on the Conference for the Improvement of the Care of the Patient. The conference, composed of representatives from the medical, hospital and nursing fields, has had four meetings at which trends of these fields have been discussed and watched. It was pointed out that this is merely a discussion group but that the interchange of thoughts is important. At the request of Dr. Johnstone and on motion of Dr. Francka, it was voted to approve the conference in principle and to appropriate $100 toward the necessary expenses of the conference.

REPORT OF EDITOR

Dr. R. O. Muether, St. Louis, Editor, outlined the purposes of THE JOURNAL as presenting original articles of general interest, reviews on specific medical subjects, organization and economic information, special articles which have teaching value and editorials, both scientific and organizational and economic. He asked the opinion of the Council on publishing controversial material, probably as correspondence so that THE JOURNAL took no responsibility for the opinions expressed. The possibility of making space available in THE JOURNAL for material from allied groups, as the Woman's Auxiliary, Medical Technicians, and Division of Health, was discussed. On motion of Dr. Dowell, THE JOURNAL was approved as it is now published. On motion of Dr. Bohrer, the Editorial Board was given authority to incorporate new features at its discretion. Dr. Virden told Dr. Muether that the Committee on Emergency Medical Service would like to have a report in one issue of THE JOURNAL to be used as a reference. Dr. Muether said this would be done, depending on the amount of the material and the possibility of doing it.

COMMITTEE APPOINTMENTS

Dr. Virden made the following committee appointments which were approved by the Council:

Committee on Alcoholism: Ralph E. Duncan, Kansas City, Chairman; S. D. Smith, Columbia; Kenneth Coffelt, Springfield; Joseph B. Kendis, St. Louis; George W. Forman, St. Joseph.

Committee on Hospitals and Professional Relations: Paul Johnstone, Kansas City, Chairman; Joseph L. Fisher, St. Joseph; C. G. Stauffacher, Sedalia; Stanley S. Peterson, Springfield; Hollis Allen, St. Louis.

Committee on Public Policy and Public Relations: W. F. Francka, Hannibal, Chairman; J. W. Thompson, St. Louis; C. Edgar Virden, Kansas City; J. L. Washburn, Versailles; G. W. Winn, Boonville.

Committee on Anesthesiology: O. B. Crawford, Springfield.

REPORT OF A. M. A. DELEGATE

Dr. Schlueter reported briefly on the A. M. A. Session. He said that the fellowship dues of $5.00 would be abolished and that the amount of membership dues would be determined at the Interim Session.

EXPENSES OF EXECUTIVE SECRETARIES

The question of whether or not the expenses of executive secretaries of county medical societies in the state should be paid for attendance at Council meetings was discussed. On motion of Dr. Fries, it was voted that expenses of executive secretaries should be paid by county societies.

FOUR YEAR MEDICAL SCHOOL

Dr. Glen Hendren attended the Council Session for a brief discussion of the situation concerning the four year medical school of the University of Missouri.

PLACE OF NEXT MEETING

Dr. Petersen invited the Council to meet in St. Joseph for its next meeting and, on motion of Dr. Francka, this invitation was accepted.

EXECUTIVE SESSION

On motion of Dr. Petersen, it was voted to allow time for an executive session of the Council on the next agenda.

MEETING OF SEPTEMBER 22, 23

The Council met at Hotel Robidoux, St. Joseph, on September 22 and 23, with Victor B. Buhler, M.D., Kansas City, Chairman, presiding. Those present were Drs. Donald M. Dowell, Chillicothe; W. F. Francka, Hannibal; Armand D. Fries, St. Louis; J. F. Jolley, Mexico; R. W. Kennedy, Marshall; Victor B. Buhler, Kansas City; W. S. Sewell, Springfield; E. C. Bohrer, West Plains; Frank W. Hall, Cape Girardeau; C. Edgar Virden, Kansas City; J. W. Thompson, St. Louis; H. E. Petersen, St. Joseph; Carroll P. Hungate, Kansas City; A. E. Spelman, Smithville; Senator John Noble, Kennett; Messrs. Lemoine Skinner, St. Louis; D. E. Caywood, Springfield; W. H. Bartleson, Kansas City; E. M. Hirsch, St. Joseph; Raymond McIntyre, St. Louis; T. R. O'Brien, St. Louis.

STUDENT AMERICAN MEDICAL ASSOCIATION

Mr. O'Brien read a letter and gave information on the Student American Medical Association stating that there were forty chapters in the seventy-nine medical schools and that there was no chapter in Missouri. After discussion by Drs. Francka, Thompson, Kennedy and Petersen, on motion of Dr. Dowell it was voted that the Council go on record of approving chapters in Missouri and giving all assistance possible.

NATIONAL FOUNDATION FOR INFANTILE PARALYSIS

Mr. O'Brien read a communication from the American Medical Association stating that upon the request of the Foundation, the Board of Trustees had agreed to the following proposals of the National Foundation:

"That in those counties where acceptable treatment facilities are already available or may be developed in the future, the county medical society recommend to the Chapter of the National Foundation for Infantile Paralysis a panel of physicians equal to double the number of committee members to be appointed, who would be willing to serve as medical advisors to the Chapter in its medical care program. The Chapter would then name a Medical Advisory Committee from this panel which would serve the Chapter and represent the medical profession.

"It is the function of the Medical Advisory Committee to:

"1. Establish within the treatment center procedures which will be uniformly acceptable to the attending staff for the admission, treatment and discharge of polio patients.

"2. Recommend to the Chapter standards of service for which monies may be spent by the Chapter in the event the poliomyelitis patient or his parents require financial assistance from the Chapter for the payment of services.

"3. Recommend to the Chapter equipment which is needed by the treatment center for the care of polio patients.

"4. Establish a schedule for the payment of medical fees if the physicians in the community are accepting payment from a voluntary public agency for professional services.

"5. Serve as a 'grievance committee' where there are disagreements between the Chapter and an individual physician regarding professional disputes over fees and other practices which may not conform to the established procedures for treatment as referred to above."

After discussion by Drs. Buhler, Francka, Sewell, Kennedy, Petersen, Dowell, Jolley and Mr. McIntyre, on motion of Dr. Kennedy it was voted to approve in principle these recommendations and to refer it to the Committee of Poliomyelitis for activation with offer of assistance from the Association office.

It was mentioned that it had been suggested that a special "Polio Policy" was being considered by Missouri Medical Service. The Council felt that this should be explored.

TREASURER'S REPORT

Mr. O'Brien presented the report of the Treasurer, in his absence, giving the financial status of the Association and showing that the payment of the assessment was progressing and that it was expected that, on present figures, 95 per cent of the assessment would be forthcoming.

REPORT OF FIELD SECRETARY

Mr. McIntyre reported on activities since the last Council meeting, including a report on the exhibit at the State Fair, in which the Association was assisted by the American Medical Association in lending an exhibit and furnishing two men to assist with it. He told of the Missouri Health Council meeting in Jefferson City on September 26. Mr. McIntyre and Dr. Virden reported an A. M. A. conference on Physician Placement to be held in Chicago on October 12 and 13. Present situation on new hospitals was given and Mr. McIntyre stated that since the first of the year 50 physicians had gone into practice in rural Missouri. After discussion, on motion of Dr. Jolley, it was voted to thank the A. M. A. for its assistance

in the exhibit at the Fair and to encourage the A. M. A. to do more of this type of thing. Dates of various postgraduate meetings throughout the state to be held during the fall were given. After discussion in which it was brought out that physician placement should be at a state level but that all state associations did not do this work actively, upon motion of Dr. Sewell it was voted that two members should attend the Conference on Physician Placement of the A. M. A.

LAFAYETTE-RAY COUNTY HYPHENATION

Upon request of Dr. Kennedy and on motion of Dr. Dowell, approval was given for Lafayette and Ray county medical societies to hyphenate.

GRAND RIVER MEDICAL SOCIETY

Mr. MyIntyre reported that at a meeting on September 20 the Grand River Medical Society was formed, composed of Caldwell, Livingston, Grundy, Daviess, Mercer, Harrison and Linn counties. The Council had formerly approved the hyphenation.

INTRASTATE MEMBERSHIP

Mr. Bartleson presented the problem in Jackson County in relation to members of the Missouri State Medical Association, who had their practice and lived in Missouri but who were on the staff of the University of Kansas and who were transferring to the Kansas State Medical Association through the Johnson or Wyandotte County Medical Societies of Kansas. After discussion in which it was brought out that Kansas State Medical membership was not required by the University of Kansas and that there was considerable difference in dues of the various county societies, on motion of Dr. Petersen, it was voted that the Council ask the executive body of the Kansas Association to approve negotiation by the counties involved.

AUDRIAN COUNTY HOSPITAL SUIT

Senator Noble stated that the briefs in the suit would be placed before the Supreme Court on September 26 and that depending on the amount of work of the Supreme Court, a decision might be expected in approximately two months.

LEGISLATION

Mr. O'Brien reported briefly on state and national legislation, calling attention to information that had been sent direct to members and carried in THE JOURNAL. He said that in the present session of the State Legislature, redistricting of the state would be time consuming and that probably not much else would be taken up.

IVES AMENDMENT

Mr. O'Brien reported that the Ives Amendment which would have allowed deductions for professional people on certain investments, is not likely to be considered by this Congress.

FOUR YEAR MEDICAL SCHOOL

The situation on the four year medical school was discussed by most of those present and upon motion of Dr. Thompson, it was voted that it be the policy of the Missouri State Medical Association to reaffirm its position in favor of the Board of Curators establishing a four year school in a metropolitan area, but that the Association recognizes the authority of the Board of Curators to establish schools within the University and conduct such schools and that the Missouri State Medical Association does not oppose any action the Board may take in this matter and will restrict the Association's activity to stating, upon appropriate occasion, the views it holds. Dr. Virden said that he had been invited to furnish information to the Missouri Alumni publication and it was suggested that the material which he presented before the legislative committee meeting at Jefferson City be submitted.

STATE LABORATORIES

A letter from Dr. Buford G. Hamilton, State Health Commissioner, was read asking the approval of the Council in his refusing laboratory work to unqualified practitioners. Upon motion of Dr. Jolley it was voted that the Council unqualifiedly approve the refusal to accept material in state laboratories submitted by other than those legally permitted to make such use of the laboratories.

1952 ANNUAL SESSION

Mr. O'Brien reported that it had only within the last few days been definitely determined that Smith, Kline and French could not furnish color television for the 1952 Annual Session and that a program was being arranged by the Committee which would include addresses, panels and conferences. He read letters concerning the reaction of exhibitors concerning the 1951 Annual Session and it was suggested that the names of the few exhibitors who were not satisfied be obtained if possible and that attempts be made to improve the things to which they objected.

A. M. A. DUES

Lists of members who are delinquent in A. M. A. dues were given each Councilor. It was stated that there might be cases in which exemption was appropriate and the Councilors were asked to report such cases.

RURAL HEALTH

Dr. Spelman reported the activities of the Committee on Rural Health and asked the approval of the Council of the Committee being active in promoting the establishment of Health Councils and County Health Centers. He reported the discussions of the Committee on the need for good practitioners, not specialists, in rural practice; the situation on use and obtaining Blue Cross coverage; the four year medical school in Missouri. After considerable discussion, it was felt that the problem of the Health Center needed further study and that further information would be forthcoming at the meeting of the Missouri Health Council on September 26, therefore on motion of Dr. Thompson, it was voted to table action on Health Centers for further study. The vote was five to four. It was pointed out that the Council had previously approved Health Councils. Dr. Virden suggested that men who had left rural practice be contacted and the reasons for their leaving determined and this information given to schools or to sources where difficulties would be overcome. On motion of Dr. Fries, the Committee was commended on its work.

FILM ON REDUCING

A film prepared by the Metropolitan Life Insurance

Company, "Cheers for Chubby," on which it had asked approval of the Council was shown. On motion of Dr. Hall, the film was approved. The A. M. A. and the U. S. Public Health Service had assisted in development of the film for showing in motion picture houses.

CIVIL DEFENSE

Dr. Hungate reported that the situation on Civil Defense was in a state of flux and that changes might be expected. He said that the October issue of The Journal would be devoted to Civil Defense. He said that it would be a good thing if schools would set up one or two day courses, to be given at intervals, on treatment of atomic casualties, and that allied groups as nurses should be included. The recent flood disaster in Kansas and Missouri with the handling of it was discussed. The present law which restricts Civil Defense work to disasters caused by enemy attack was discussed but it was felt that nothing should be done at the present time in trying to change the law. On motion by Dr. Bohrer, it was voted to approve the suggestion to medical schools that they incorporate programs on treatment of atomic casualties. On motion of Dr. Sewell, the Council voted to accept the report and commend the work of the Committee.

WHITE HOUSE CONFERENCE

Dr. Petersen presented a request from the Missouri Association for Social Welfare for the Association to join the advisory council which will represent lay and professional organizations formed to formulate and carry out the recommendations of the recent White House Conference. Mr. McIntyre reviewed the appointment by the Governor of a committee for study of the White House Conference and later the dismissal of the committee after the Conference. He reported that 135 organizations were represented at a meeting held on May 26 called by the Missouri Association for Social Welfare in this connection. After discussion, on motion of Dr. Fries, it was voted to table the matter and refer to the Committee on Infant Care for further information and advice.

MILK INSPECTION LAW

Dr. Virden presented the request of Dr. Hamilton that the Council approve bringing all milk inspection in the state to conform with the U. S. Public Health Service standards. Discussion brought out that because of well established work in some parts of the state, the problem became complicated and it needed close study. On motion of Dr. Petersen, it was voted to refer the matter to the proper Committee for consideration and that Dr. Hamilton be informed by letter of the action of the Council.

GOVERNMENT BONDS

Upon information given by Dr. Virden, it was voted that letters be sent by the Treasury Department to members concerning the purchasing of government bonds.

BUDGET COMMITTEE

The Chairman appointed the following Budget Committee: Drs. Virden, Thompson, Hyndman, Petersen and Francka.

PLACE OF MEETING

It was decided that the November meeting of the Council would be held in St. Louis.

COUNCIL GUESTS

It was suggested that Councilors bring guests from their district to Council meetings for the purpose of members becoming more conversant with the work of the Council. It was decided that Councilors of odd numbered districts bring a guest to the next Council meeting and that Councilors of even numbered districts invite a guest for the next meeting.

EXECUTIVE SESSION

The Community Health League of Missouri was discussed in executive session. On motion, it was decided that the Council wished the Community Health League to continue its work along present lines.

On motion, it was voted that the Missouri State Medical Association should refund the money advanced by the Community Health League in the Audrian County Hospital suit, the amount of which was $2,366.45.

MEETING OF NOVEMBER 24, 25

The Council met at the Sheraton Hotel, St. Louis, on Nov. 24, 25, 1951, with Victor B. Buhler, M.D., Kansas City, Chairman, presiding. Those present were Drs. Donald M. Dowell, Chillicothe; W. F. Francka, Hannibal; Armand D. Fries, St. Louis; John O'Connell, Overland; J. F. Jolley, Mexico; R. W. Kennedy, Marshall; Victor B. Buhler, Kansas City; E. C. Bohrer, West Plains; C. Edgar Virden, Kansas City; J. W. Thompson, St. Louis; H. E. Petersen, St. Joseph; C. E. Hyndman, St. Louis; R. E. Schlueter, St. Louis; John Mayer, Kansas City; J. H. Summers, Lebanon; W. J. Shaw, Fayette; Robert Mueller, St. Louis; Messrs. Lemoine Skinner, St. Louis; W. H. Bartleson, Kansas City; John G. Miller, St. Louis; Raymond McIntyre, St. Louis; T. R. O'Brien, St. Louis. On Sunday the following attended: Drs. Daniel L. Sexton, St. Louis; R. O. Muether, St. Louis; L. M. Garner, Jefferson City; T. L. Dwyer, Mexico; A. S. Bristow, Princeton.

REPORT OF FIELD SECRETARY

Mr. McIntyre reported on meetings since the last Council meeting. He reported that the Missouri Health Council, meeting on September 26, discussed the indigent care problem in Missouri and that a committee from the council would make a study and report back to the Health Council as soon as possible.

Physician Placement.—He reported attendance at a conference called by the A.M.A. on Physician Placement and said that all states did not attempt to place physicians and that Missouri stood well in this work among other states.

White House Conference.—He reported that the Missouri Society for Social Welfare with an Advisory Council of other organizations was working on carrying out the recommendations of the White House Conference, that their child care committee would act as the Executive Committee for this work and that the State Medical Association had no chance of representation as such on this committee should it join the Advisory Council. It was pointed out that two physicians were in position to know the work of the committee, however.

Physicians and Schools.—He reported, together with Dr. Petersen, a conference on Physicians and Schools which was held Nov. 6 to 8 under the auspices of the A.M.A. After discussion of the place of the phy-

sician, the public health nurse and others in the problem of health of school children, especially in rural areas, it was decided upon motion of Dr. Virden to refer this to the Committees on Rural Health and on Infant Care for joint study and report to the Council.

Society Meetings.—Mr. McIntyre reported several meetings at which programs of different nature had been presented, as a clinical pathologic conference, wet clinics, heart clinics and panel presentations.

Woman's Auxiliary.—He reported that the Woman's Auxiliary had been furnished speakers for public relations meetings in several places.

UNIVERSITY OF MISSOURI FOUR YEAR MEDICAL SCHOOL

Mr. O'Brien said that there was little further to report as Councilors were cognizant that an appropriation of $9,000,000 for a four year medical school with no designated location, was included in an omnibus bill in the House. An exchange of letters between Mr. Powell McHaney, President of the Board of Curators, and Dr. Thompson, relative to the four year school, was reviewed.

PHYSICIANS AND MILITARY SERVICE

Dr. Mueller reviewed the situation on physicians going into service. He stated that there were 296 physicians registered who were in priority 1 and that of these fifty-nine had been deferred as essential and forty-one had been deferred because of physical disability. He asked that men deferred because of physical disability be given consideration and not criticized because they had not gone into service. He stated that there were fifty-seven in priority 2, 611 in priority 3 and 1,036 in priority 4. Upon motion of Dr. Virden, Dr. Mueller was thanked for his work.

REPORT OF COMMITTEE TO STUDY LOCATION OF MISSOURI STATE MEDICAL ASSOCIATION OFFICE

Dr. Shaw presented the following report of the special committee appointed by the Speaker of the House of Delegates to study the location of the Association office.

"This Committee met on September 30, 1951 at the Missouri Hotel in Jefferson City, Missouri, with members Drs. Dowell, Finney, Sale, Yancey, Mayer and Shaw present. Member E. D. Sugarbaker was absent but was interviewed by the chairman of the committee at a later date.

"Each member of this Committee had been furnished reference data relative to this proposal and the action taken at the 1949, 1950 and 1951 meeting of the House of Delegates of the Missouri State Medical Association. Letters from the chairmen of all standing committees had been received and were studied. Letters from other state medical associations that maintain offices in state capitals and from associations that maintain offices in cities other than the state capitals were studied and various state plans compared to that proposed for Missouri.

"The advantages and disadvantages of moving the office of the Missouri State Medical Association to Jefferson City were carefully studied and discussed. The reasons for and objections to a sub-office being opened and maintained in Jefferson City were considered in detail. The cost of this move and the facilities available for an office in Jefferson City were subjected to exhaustive examination.

"After intensive study of the resolution presented in 1951, and those submitted in past sessions with the actions taken by the House of Delegates and the Council and after a sincere effort to include all the implications, originating ideas, and pros and cons of past recommendations, your committee unanimously approved the following report:

"1. This committee does not recommend the removal of the Missouri State Medical Association headquarters to Jefferson City.

"2. This committee recommends that a committee on Legislation be created by the Council of the Missouri State Medical Association. The Chairman of this committee will be a paid executive secretary, who will reside in and maintain an office in Jefferson City, Missouri, and who may be a doctor of medicine or a layman. The duties of this executive secretary will be to act as liaison for the Missouri State Medical Association in all legislative matters, to report to the medical association headquarters and to confer with that office on all legislative projects pertinent to the medical profession, and to maintain proper contact with professional and allied groups in Jefferson City."

He stated that reports had been received from twenty-four states which have their offices in the capital of the state, twelve of which are the largest cities in the states. This was discussed by all present in which costs, what other organizations do, advantages in legislative matters as well as disadvantages were brought out. Upon motion of Dr. Thompson, seconded by Dr. Bohrer, it was voted that the Council approve the first recommendation, that the office not be moved to Jefferson City and not approve the second recommendation of having a sub-office in Jefferson City and that the committee be thanked for its work and dismissed.

AUDRAIN COUNTY SUIT

Mr. O'Brien spoke briefly on the Audrain County Hospital suit, pointing out that it is now on the banc docket of the Supreme Court and that it is possible that a decision may be given on the second Monday in December but more likely that it will not be given until January.

CONFERENCE OF PRESIDENTS

Upon motion of Dr. Petersen, it was voted that $50.00 be appropriated for the Conference of Presidents.

A.M.A. FELLOWSHIP

Mr. O'Brien read a letter from the A.M.A. which stated that the Board of Trustees had approved having no fellowship dues in 1952.

MISSOURI KANSAS MEMBERSHIP

Mr. O'Brien reported that a conference would be held between Kansas and Missouri representatives concerning the problem of membership of men on the borderline of the two states; that the conference had been delayed so that it could be placed before the Kansas Council.

A.M.A. PLAQUE

A plaque for physicians' offices prepared by the A.M.A. was presented which reads as follows: "To All My Patients. "I invite you to discuss frankly with me any questions regarding my services or my

fees. The best medical service is based on a friendly, mutual understanding between doctor and patient." It was thought that this could well be advertised in The Journal so that members would know how to obtain it.

A.M.A. EDUCATIONAL FOUNDATION

Mr. O'Brien read a letter from the A.M.A. concerning the American Medical Association Educational Foundation which stated that eleven physicians in Missouri had contributed to the fund; that the largest contribution had been from Iowa with 3.56 per cent of the membership contributing.

ROSTER

Upon motion by Dr. Petersen, seconded by Dr. Jolley, it was voted to print a roster of members in the February issue of The Journal.

UNLICENSED PRACTITIONERS

A request from a county society for assistance in deterring medical practice by persons holding no license was presented. In discussion it was brought out that the Association has no disciplining power except with its own members, that such matters have to be handled on the local level through the local prosecuting attorney. Mr. O'Brien said that Mr. Hailey of the Board of Medical Examiners was studying injunction clauses in laws in other states and that they may desire that a bill be introduced.

RADIO PROGRAMS

Dr. Virden told of radio programs being given by the Colorado Association which are similar to the program "Health and Happiness" which is given in Kansas City. After discussion, on motion of Dr. Petersen, it was voted to ask the Committee on Public Relations to study the possibilities and report to the Council.

WOMAN'S AUXILIARY'S RADIO PROGRAM

Dr. O'Connell called attention to the program to be sponsored by the Woman's Auxiliary of the St. Louis County Medical Society of radio transcriptions obtained from the A.M.A. Upon motion of Dr. O'Connell, approval of the program was voted.

AMERICAN ASSOCIATION OF PHYSICIANS AND SURGEONS

Drs. Bristow and Dwyer asked for endorsement by the Association of the American Association of Physicians and Surgeons. Dr. Dwyer stated that forty states had endorsed the organization but it was not certain whether or not the A.M.A. had endorsed it. Upon request, Dr. Dwyer read the purposes of the organization as follows:

"2. The purpose or purposes for which it is formed are as follows: To supplement the work of existing scientific medical societies by uniting psysicians and surgeons so that they may act effectively in the public interest to improve the quality of medical care; to achieve the universal distribution of medical and surgical care under conditions that will both improve the quality of the service and remove economic barriers to its delivery; to establish general public understanding of and cooperation with the profession in the objectives and purposes of individual and organized activities and to promote ideal relations between the profession and the public; and to protect and improve the welfare and interests of its members in order that the profession may improve the service through the maintenance of professional and ethical standards that will attract the best of men and women to the study and practice of the art and science of medicine, and to that end will stress moral character and ethical attitude of applicants for matriculation as being of equal importance with scholastic attainments. It is committed to policies which give to the individual physician as well as to the patient his freedom of action, so that the traditional relation of physician and patient shall be maintained inviolate. The ultimate test of all of its actions shall always be the public interest."

Upon motion of Dr. Petersen, the purposes of the organization as read by Dr. Dwyer were approved.

JOURNAL CHANGES

Dr. Muether outlined a proposed change in The Journal in which both news and society proceedings would be carried under the heading of each Councilor District and asked that Councilors take responsibility of getting material to The Journal and that they ask members of societies in their districts to do this. It was suggested that the Editor also write to county society secretaries. Upon motion of Dr. Petersen, seconded by Dr. Jolley, this change was approved.

CHARTER

Mr. O'Brien said that Dr. Kane had been advised that some minor changes be made in the Amended Charter. The proposed changes were approved unanimously by the standing Committee on Constitution and By-laws which recommended that it be brought to the attention of the Council for approval. He presented the proposed form as follows:

Amended Articles of Agreement
of the
Missouri State Medical Association

Article I

This corporation, located in the City of St. Louis, Missouri, shall be known by the name and style of the Missouri State Medical Association, and its duration shall be perpetual.

Article II

The purposes of this corporation are: to bring into compact organization the entire medical profession of the State of Missouri, aiding thereby the extension of medical knowledge and the advancement of medical science; to promote and elevate the standards of medical education; to assist in the enactment and enforcement of just medical and public health laws; to encourage friendly intercourse among physicians; to enjoin and sustain measures of interest and advantage to the public and the medical profession; and, to promote the advancement of science, knowledge and skill in the medical profession.

Article III

This corporation shall have all the powers necessary or proper for the accomplishment and furtherance of the above stated purposes and all other powers incidental or related thereto, including but not by way of limitation, the following:

(a) To purchase, receive and take by gift, grant, devise or bequest, real or personal property; to hold,

administer, sell, invest and reinvest such property, and to use, disburse and distribute such property, and the income therefrom, for the scientific uses for which this corporation is constituted.

(b) To contract, be contracted with, to sue and be sued, to plead and implead, and shall have the right to acquire, own, hold, mortgage and dispose of such real and personal property as shall be necessary for the proper maintenance and conduct of its affairs.

Article IV

This corporation shall have no capital stock and is not formed or organized for pecuniary profit in any form whatsoever.

Article V

The officers, Directors and Members of this corporation shall be forever exempt from liability for debts and obligations of any kind of this corporation.

Article VI

This corporation shall have power to execute any trust, the purpose whereof is within the purview of Article 352.030, Chapter 352, RSMo. 1949, and within the objects and purposes for which this corporation is formed, and may receive and take by deed, devise or bequest, in its corporate capacity, any property, real or personal, for the uses and purposes of such trust, and to execute the trust so created.

Article VII

This corporation shall have the right to make such rules and regulations as may be necessary to carry out the purposes of the Association.

Upon motion of Dr. Petersen, the changes in the Charter were approved.

BUDGET

Dr. Petersen gave the report for the Budget Committee and moved the adoption of the following Budget, which was adopted:

Budget for 1952

Salaries	$30,000.00
Journal Expense	21,000.00
Postage, Printing and Stationery	3,000.00
Travel, Executive Secretary	900.00
Travel, Field Secretary	1,600.00
Telephone and Telegraph	1,200.00
Office Rent and Light	3,000.00
Meetings, Committee Expense	14,100.00
Defense	500.00
Scientific and Postgraduate	1,000.00
Woman's Auxiliary	700.00
Public Relations	5,500.00
Insurance Annuity	950.00
Miscellaneous General Expense	1,500.00
Furniture and Fixtures	250.00
Social Security Tax	425.00
Total	$85,625.00

ANNUAL SESSION PROGRAM

Dr. Sexton gave the following report:

"The Program for the 1952 Annual Session is shaping up well and we believe will be a good program. I will not go through the whole program but will report on it in general.

"It was impossible to obtain television again this year and the program will follow to some extent the plan of those prior to the last two years. However, for the first half hour of each session, we plan to have motion pictures. Then on Monday and Tuesday, for the latter part of the morning sessions, we will break the program into two sections or symposia running simultaneously. On Monday we will have symposia on Obstetrics and on Medicine, both beginning at 10:30 and running to noon, with a guest speaker from out of state on each program. On Tuesday, we will have symposia on Pediatrics and on Surgery, each with a guest speaker. At noon of each of these days we will have round table luncheons with all speakers participating.

"We are going to try having a program during the early part of the afternoon on Wednesday and making it a good program. Possibly, this is pretty much for the St. Louis physician who may find this his first opportunity to get to the meeting but also for those who are not in the House of Delegates but do not leave town until late afternoon.

"It was suggested that there be a round table luncheon also on Wednesday and that tickets for the luncheons should be sold at the time of registration."

A.M.A. BOARD OF TRUSTEES

Dr. Schlueter spoke briefly of the work to come before the Interim session of the A.M.A. and asked the Council if they wished him to attempt to have a Missouri member on the Board of Trustees. On motion of Dr. Bohrer, the Council voted to sponsor Dr. McVay for the Board of Trustees.

FRANKLIN-GASCONADE-WARREN COUNTIES

Dr. O'Connell reported that Franklin, Gasconade and Warren Counties wished to hyphenate and asked that the Council request the House of Delegates to change Gasconade County from the 5th Councilor District to the 4th District so that this could be done. It was voted that the Council would make this request.

HEALTH COUNCILS AND HEALTH UNITS

At the request of Dr. Hamilton, Dr. Virden presented several problems, the first one on health councils and health units. It was pointed out that the Council had approved Health Councils. After considerable discussion, it was agreed that the Committee on Rural Health be asked to investigate further and furnish information to the Council on the matter of Health Units. Dr. L. M. Garner, of the State Division of Health entered the discussion and answered questions on health units and public health work.

Cancer Detection Centers.—It was decided that consultation should be held with the Missouri Chapter of the American Cancer Society to determine just what standards they had set up and then study this question.

Laboratories.—It was pointed out that by law the state laboratory must make any tests that are requested of it. Dr. Buhler said that the Missouri Society of Pathologists are willing to do any work for indigent patients in the state. It was felt that the methods of procedure for this should originate from the pathologists and that then the Council might be in a position to attempt to obtain legislation that would change the present procedures.

Graduate and Practical Nurses.—After discussion

it was decided that the Conference on Care of the Patient be asked to study the situation of the practical nurse and that any action await further information.

Nursing Homes.—It was reported that there is an organization of convalescent and nursing homes which is trying to raise standards of such homes. It was decided to write this organization and offer any assistance that the Association can give.

Barbiturates.—The possibility of the help which state laws would be in barbiturate addiction was discussed. It was decided that the new federal law should be studied and given some time to see if it was effective before anything should be done at the state level.

X-ray Screening.—The x-ray screening of all hospital admissions, as advocated by the Tuberculosis Society, was discussed. It was felt that because of the cost to the hospitals, and ultimately to the patients, that the Council did not have the prerogative to take action on this problem as requested by Dr. Hamilton.

Dr. Virden was asked to report to Dr. Hamilton on the things he had asked discussed and to thank him for his cooperation with the Council, as well as wishing him speedy recovery from his present illness.

A.M.A. STUDENT ORGANIZATION

Dr. Muether discussed the Student A.M.A. and expressed the opinion that it might be better for students to be made special members of already existing societies.

KANSAS CITY MEETING

Dr. Virden invited the Council to hold its next meeting in Kansas City. The invitation was accepted.

MEETING OF FEBRUARY 16, 17, 1952

The Council met at the President Hotel, Kansas City, on February 16 and 17 with Victor B. Buhler, M.D., Kansas City, chairman, presiding. Members and visitors present were: Drs. Donald M. Dowell, Chillicothe; W. F. Francka, Hannibal; John O'Connell, Overland; J. F. Jolley, Mexico; R. W. Kennedy, Marshall; W. S. Sewell, Springfield; E. C. Bohrer, West Plains; C. Edgar Virden, Kansas City; J. W. Thompson, St. Louis; C. E. Hyndman, St. Louis; H. E. Petersen, St. Joseph; James R. McVay, Kansas City; F. T. H'Doubler, Springfield; W. W. Tillman, Springfield; Paul Johnstone, Max Goldman, Vincent T. Williams, Carroll P. Hungate, Gerald L. Miller, Frederick B. Campbell, R. Lee Hoffman, John Growdon, Stanely Morest, A. W. McAlester, Jr., W. P. Bunting, W. C. Schaerrer, Kansas City; W. A. Bloom, Fayette; Buford G. Hamilton, F. W. Meinershagen, Jefferson City; A. E. Spelman, Smithville; Messrs. John Noble, Kennett, D. E. Caywood, Springfield; Edward Hirsch, St. Joseph; W. H. Bartleson, Kansas City; Lemoine Skinner, Raymond McIntyre, T. R. O'Brien, St. Louis.

RESOLUTION OF MFBF

Mr. O'Brien read a resolution adopted by the Missouri Farm Bureau Federation at their annual session which encouraged health councils, health units and hospitals, and a four year medical school which would best insure doctors going into rural practice.

A.M.A. DELEGATES

Mr. O'Brien announced that the American Medical Association included members who were exempt from paying dues and that Missouri would retain its four Delegates.

EMERGENCY MEDICAL SERVICE

Dr. Hungate reported briefly, stating that there would be another special issue of The Journal on Civil Defense and that arrangements had been completed with medical schools for them to train physicians in treatment in connection with atomic attack through meetings to be arranged by the Postgraduate Committee of the Association.

TREASURER'S REPORT

Dr. Hyndman gave a report based on the audit of the Association books for 1951 and gave an analysis of the finances of the Association through the last three years, together with an estimate on 1952. He stated that the Association, while financially stable, still was running on a deficit basis and suggested that there were three possibilities (a) curtail activities, (b) increase dues or assessments and (c) continue deficit spending for a limited time. After discussion, the question was referred to the budget committee with the request that they make a recommendation at the Sunday session.

CARE OF THE PATIENT

Dr. Johnstone reported on the recent meeting of the Conference on Care of the Patient, saying that the basic consideration of the Conference remained "What is the point of view of people of Missouri when thy are sick?" He said that the Conference was studying hospital licensure, nursing homes and hospital insurance. He asked that the Council appropriate $100 for the use of the Conference and pointed out that the terms of delegates had expired. Upon motion of Dr. Virden, the Council voted to request further study of the Conference on enforcement or change in the law on nursing homes. On motion of Dr. Sewell, the Conference was given $100.00. Dr. Buhler appointed the following delegates to the Conference and the Council approved: Dr. Johnstone for 1 year; Dr. C. G. Stauffacher, Sedalia, 2 years and Dr. Hollis Allen, St. Louis, 3 years.

KANSAS, MISSOURI MEMBERS

Mr. Bartleson reported on a conference in December concerning membership in Kansas or Missouri of physicians who lived in one state and had their practice or school connection in the other. It was suggested that the committee be composed of the chairmen of the board of censors of the Wyandotte County Medical Society (Ks.), the Johnson County Medical Society (Ks.), and the Jackson County Medical Society (Mo.). In addition, the councilors of the councilor districts in which these county societies are located in each representative state (Kansas and Missouri) shall be members of the committee. This committee shall be known as The Eligibility Conference Committee of the Kansas Medical Society and the Missouri State Medical Association. On motion of Dr. Sewell the report was adopted with the recommendation that the action of the committee be binding.

A.M.A. EDUCATION FOUNDATION

It was pointed out that the chairman of the Committee on Medical Education was attending a meeting in Chicago at the present time. The assistance given schools by the Foundation was reported and it was pointed out that men now can give money to a specific school through the A.M.A. Education Foundation.

MATERNAL WELFARE

Dr. Miller reported for the Committee on Maternal Welfare and said that the Committee wished to make a thorough study of the causes of maternal deaths in Missouri. It was pointed out that funds would be needed for this study and that the Division of Health could make funds available. Through discussion, it was brought out that most of the study could be done by

members of the Committee and others and that it was best not to use Association funds for the project. On motion of Dr. Petersen, the Committee was commended for its work and the project of investigation of maternal deaths was endorsed but no funds were made available by the Association.

AUDRAIN COUNTY HOSPITAL SUIT

Mr. Noble stated that the Supreme Court had held that constitutionally it would not hear the case and that it had been transferred to the St. Louis Court of Appeals. He said that an appeal for reconsideration had been made to the Supreme Court but that it was refused and that the St. Louis Court of Appeals would likely set a hearing early in May.

LICENSING PSYCHOLOGISTS

Correspondence concerning S. B. 214 which provides for licensing psychologists was presented. On motion of Dr. Virden this was referred to the Committee on Mental Health.

LEGISLATION

Mr. O'Brien discussed present legislation briefly and discussion by most of the Council followed on the political situation, both state and national. It was pointed out that the law prohibits a medical society from (a) Endorsing a candidate, where it involved expenditure of general corporate funds, (b) Contributing funds to any candidate for Federal office, (c) Using Medical Society letterheads or facilities to advance work in behalf of a candidate, (d) Sponsoring any other form of advertising material for a candidate. After discussion and upon recommendation of Mr. O'Brien, it was decided that the Association should join with several other organizations in a "Get Out the Vote" campaign. On motion of Dr. Petersen, it was voted that information on registering and voting go to all members and to the Woman's Auxiliary.

FIELD SECRETARY'S REPORT

Mr. McIntyre reported on a number of meetings and speakers provided since the last Council meeting and discussed medical situations in several sections of the state. He reported on a meeting of the Missouri Health Council at which it was proposed that a committee of the Health Council conduct a survey of indigent medical, dental and hospital care in Missouri. It was stated that Dr. C. E. Liveley of the Rural Sociology Department of the University of Missouri had been contacted about conducting the survey. Funds to finance the survey were discussed, it being pointed out that federal funds were available but that an attempt was being made to obtain local funds. Mr. McIntyre proposed that each Councilor hold a meeting once or twice a year for county society secretaries and presidents in his district at which organization matters could be thoroughly discussed. This was approved and it was suggested that each Councilor make his own plans. Upon motion, the hyphenation of the Scott, Stoddard, New Madrid and Mississippi county medical societies to form the SEMO County Medical Society was approved. On motion, the hyphenation of the Carroll County Medical Society with the Grand River County Medical Society was approved.

STUDENT A.M.A.

A letter from the Student American Medical Association chapter at the University of Missouri was read, requesting that Dr. J. W. Allee, Columbia, be their Association advisor. Upon motion this was approved.

MEDICAL TESTIMONY

Dr. Virden presented material from the Kansas City School of Law and also from the Missouri Bar Association, the latter asking that a committee from the Association be appointed to meet with a committee from the Bar Association to discuss mutual problems. After discussion and review of previous requests followed by committee appointments, it was voted, on motion of Dr. Thompson, that a committee be appointed to meet with a committee of the Bar Association.

ANNUAL SESSION

Various phases of the annual session were discussed and reported on. It was decided that the Council would meet on Sunday morning, March 30, prior to the meeting of the House of Delegates.

PUBLIC RELATIONS

Dr. Francka presented a report of public relations activities including report of a meeting of the Committee. He stated that the Committee proposed to issue a pamphlet for the use of the physician in his office giving information for both the physician and the secretary on various public relations phases. On motion of Dr. Petersen, the report was accepted and the Committee was asked to explore further the publishing of the booklet.

A.M.A. SESSION

Dr. McVay reported on the Los Angeles Interim session of the American Medical Association, calling attention to the minutes having been published in the *Journal of the American Medical Association* but giving more detail on several phases, including the Hess committee report, placement service, the Shoulders plan. He presented information on the work of the Council on Medical Service.

RURAL MEDICAL SERVICE

Dr. Spelman presented a report from the Committee on Rural Medical Service reviewing a meeting in Chicago on physician placement; the plan of the Missouri committee to make a pilot study in Stanberry and Mansfield to determine the best plan for physician placement; a plan of the Committee to conduct a survey on the shortage of doctors in Missouri to determine just what the situation is; a study to be made by the Committee of health units, each member to study two units and report to the Committee; progress in Health Council work in the state. This prompted discussion of Health Councils, the place of the physician in the Health Councils, the part that the Division of Health should play. On motion of Dr. Francka, the Council reapproved Health Councils and urged Councilors to assist in their formation.

BLUE CROSS IN OSTEOPATHIC HOSPITALS

The situation in the St. Louis Blue Cross of a proposal to cover osteopathic hospitals was reviewed. On motion of Dr. Jolley, the Council approved the stand that St. Louis Blue Cross has taken in not accepting osteopathic hospitals.

BUDGET COMMITTEE REPORT

Dr. Hyndman, reporting for the committee studying the financial situation of the Association, asked that final report be given later and that Councilors determine whether members preferred increased dues or an assessment as the committee felt one or the other was necessary. This was approved.

CLINICAL PATHOLOGIC CONFERENCES

Mr. O'Brien, speaking for the Editor, asked that an appropriation be made for recording machines so that clinical pathologic conferences might be obtained for publication in THE JOURNAL. After discussion, in which approximately half the Council stated that these would be available from hospitals with which they were connected, it was decided that further attempt be made to obtain submission of conferences for publication.

INDIGENT CARE

Dr. Hamilton discussed the survey, which had been reported by Mr. McIntyre to be made by a committee of the Missouri Health Council of medical, dental and hospital indigent care in the state. Dr. Hamilton pointed out that funds were available through the Division of Health for such a survey and that it had been estimated that it would cost $60,000 to make the survey. Acceptance of federal funds, just what the survey was to cover and how pertinent it is to the medical profession and who would interpret it were discussed. On motion of Dr. Virden, it was voted that following a scheduled conference between Dr. Hamilton and Dr. Liveley, Dr. Hamilton report to the Council as to what the survey will cover, how it will be conducted, how the problems will be approached and by whom it will be conducted, at the same time Mr. McIntyre to explore further obtaining private funds.

FOUR YEAR MEDICAL SCHOOL

The present situation on a four year medical school for the University of Missouri was stated as that a 6 million appropriation in an omnibus bill had been approved by the House; that the Senate, now considering the omnibus bill, will go back in session on February 25 and that there may be further action at that time.

Victor B. Buhler, Chairman.

Dr. Buhler: Mr. Speaker, Members of the House of Delegates, The Council desires to call to the attention of the House of Delegates certain activities of the year 1951-1952 which are worthy of special emphasis, although most of these activities are reported elsewhere.

The Council wishes to call attention to the outstanding work of the various Committees of the Association, most of which have reported their work in the booklet "Reports of Officers and Committees."

The Council desires to report that it has carried out the wishes of the House of Delegates relative to the amendment of the Charter. An amended Charter has been granted to the Association. It varies slightly in content from that adopted by the House of Delegates at the last session, however, not in any way changing the meaning or sense as adopted. Instead it is believed that the charter has been strengthened. The attorney, who handled the work, recommended these changes to the standing Committee on Constitution and By-laws which approved them. The Committee on Constitution and By-laws then requested that the Council approve the changes. The Council officially approved of the changes and the amended Charter was then obtained. The new Charter is published in the Report of the standing Committee on Constitution and By-laws in "Report of Officers and Committees." The standing Committee on Constitution and By-laws has worked long and untiringly to present the final report of the recommended changes. It has taken the Committee three years to complete the work. The efforts of this particular Committee, as well as the preceding ones, merit the special commendation of the House.

The speaker of the House of Delegates appointed a special committee composed of Drs. Shaw, Dowell, Finney, Sale, Yancey, Mayer and Sugarbaker to study a resolution submitted by Dr. Otto Blanke, Jasper County, relative to the establishment of the Association office or a suboffice in Jefferson City. The committee was instructed to study the matter and report to the Council for decision of that body. The report of the committee will be found on pages 65 and 66 in "Reports of Officers and Committees." Action of the Council on the report appears on pages 66 and 67.

I am sure that many present are interested in this action. Many may not agree with the position taken by the Council. This Council action will be reviewed further by the appropriate Reference Committee and I would suggest that the members of the special committee and other delegates that are interested appear before the Reference Committee to express their views.

Relationships between the Association and the Division of Health of the State of Missouri have never been better. Committees of the Association have met with representatives of the Division of Health to discuss matters of mutual interest. This pleasant relationship is due, in no small way, to the efforts of the present Director of the Division, Dr. Buford G. Hamilton. Dr. Hamilton has worked untiringly and effectively in his efforts to improve the health of the people of the state and to assist the Association.

The Committee on Publication and the Editorial Board have effected many changes in the make-up and content of The Journal during the last two years. These changes and improvements have been received with great appreciation as evidenced by the many favorable letters and comments received from the members. The Council, in bringing this to your attention, desires to thank the Editor, the Committee on Publication and the Editorial Board for their work.

The Council wishes to call to the attention of the House several hyphenations of county medical societies, which have been approved by the Council on request of the county societies involved. These are: Lafayette and Ray County Medical societies, forming the Lafayette-Ray County Medical Society in Councilor District 6; Caldwell-Livingston, Carroll, Grundy-Daviess, Harrison, Linn and Mercer County Medical societies, forming the Grand River Medical Society in Councilor District 1; Mississippi, New Madrid, Scott and Stoddard County Medical societies, forming the SEMO County Medical Society in Councilor District 10. These hyphenations have been carried out under the terms of Chapter VI, Sections 2, 5 and 6, of the By-laws. They should increase the scientific interest of the physicians involved and also stimulate their interests in affairs of the Association.

The House of Delegates adopted a resolution at the last Annual Session commending the Board of Curators on their decision to reestablish the full four year course in medicine. The resolution called attention, however, to the report of Dr. Harold Diehl which indicated clearly that the school should be located in a metropolitan area. The resolution pointed out the advantages of a metropolitan location, such as clinical facilities, lower initial construction costs and continuously lower operating costs and availability of a teaching faculty.

The Curators, however, continued to support the Columbia site. The Legislature, to all intent, has approved an appropriation of $6,000,000 to the Curators and while it does not state a location, it is believed that the funds will be used to establish the school in Columbia.

The Association was accused by the President of the Board of Curators in a radio address as having adopted a "rule or ruin" policy regarding the school. He stated that medical politicians within the Association had prevailed upon other members and had given false information about the Columbia location. This led to an exchange of correspondence between Mr. McHaney of the Curators and Dr. J. W. Thompson, President-Elect of the Association. Dr. Thompson clearly pointed out the policy of the Association, as follows: (a) The Association believes there should be a four year school. (b) The school should be located in a metropolitan area. (c) All four years should be in one location—no split school. (d) The Association recognizes the authority of the Curators to establish the school, does not oppose any action of the Curators and will restrict its activity to stating, upon appropriate occasion the views it holds. It has attempted to per-

suade the Curators of the views of the Association and will continue to do so. (e) In the event the school is finally approved and funds for its construction are made available at Columbia, the Association will cooperate in every way possible to make the school a success.

It is the opinion of the Council that this is not a "rule or ruin" policy. We have said what we believe is true and regardless of the outcome expect to stand by the policy. It is our intention to again request a meeting with the Curators in order to attempt to persuade them to use the funds granted by the Legislature to locate the school in Kansas City rather than Columbia.

The following matters for the attention of the House of Delegates were acted upon by the Council at its meeting this morning.

It is believed delegates will be interested in the following letter written by Dr. J. W. Thompson to the Washington Office of Internal Revenue concerning the deduction of entertainment expense by physicians from their income tax. This is written to Mr. John B. Dunlap, Commissioner of Internal Revenue:

Will you please oblige us with explicit rulings to guide our members in deducting professional expenses on income tax returns?

For no apparent reason, it appears that the income tax law is now being interpreted differently than it was in prior years, and deductions which were heretofore allowed are now being questioned.

Your subordinates are contending that these deductions are not "ordinary and necessary expenses incidental to the conduct of their profession," or, that they are "unethical" or, "against public policy."

"Ethics" are determined and defined for doctors by the American Medical Association and State Medical Associations. Doctors, and doctors alone, are most competent to determine what is, and what is not, ethical in the practice of their profession.

The Journal of the American Medical Association dated December 22, 1951, pages 1686 and 1687, will confirm that the American Medical Association has held:

"The Judicial Council has been asked to express its opinion with respect to the ethical aspects of expenditures made by physicians. The Council does not consider such expenditures as per se unethical. There are circumstances under which a professional obligation may rest on a physician to entertain other physicians. It is a usual and necessary concomitant of the practice of medicine. It is certainly not an uncommon practice and is recognized by the profession generally as entirely proper and justifiable.

"The opinion of the Council was requested on this matter because governmental tax authorities in several jurisdictions have questioned the right of physicians to deduct entertainment expenses for income tax purposes, contending that such expenditures are unethical. The Council is informed that the deductability of similar expenditures has been permitted where the taxpayer is a lawyer. The Council knows of no reason why a different ruling should apply when a taxpayer is a physician. . . .

"The Bureau of Legal Medicine and Legislation is receiving an increasing number of inquiries from physicians whose deductions of entertainment expenses have been questioned. This clarifying statement by the Council may be of much help to these physicians."

Bearing the above expressed opinion in mind, we will appreciate your kindness in supplying us with a clear and cogent answer to the following questions:

1. Are physicians allowed to deduct expenses of entertaining other physicians by whom patients are referred, when, as a result of maintaining such social relationships, taxable income is produced?

2. Are physicians allowed to deduct contributions made to funds raised for the social activities of student hospital nurses? These contributions are physicians' expressions of appreciation of service rendered by these student nurses to physicians and their patients.

3. Are physicians allowed to deduct contributions made to hospital interne funds? Such funds are raised for the purpose of maintaining hospital interne libraries and defraying expenses of social functions of the internes and are, again, a means of showing appreciation of services rendered to staff physicians and to their patients.

4. Are physicians allowed to deduct expense of Christmas or other anniversary presents sent to patients or to other physicians?

5. Are physicians allowed to deduct the cost of floral offerings and kindred items sent to patients or to other physicians, on joyful or sorrowful occasions?

All such expenses are common to all physicians; they are productive of income; they are "ordinary and necessary expenses incidental to the conduct of their profession"; they are not "unethical" or against "public policy" and, as like expenses are deducted by corporations, lawyers, certified public accountants, and other individuals with your approval, we cannot understand why they should be denied to physicians.

If you rule that they are not allowable to physicians we respectfully request that you supply us with citations of all court cases upon which your ruling is predicated.

Please understand that we do not seek any privilege or favoritism; that we do resent discrimination; that we do seek equal treatment under the law, which we believe was the intent of Congress in conformity with our Constitutional rights.

A comprehensive and documented reply, for publication in our Journal, will be appreciated.

A reply has not been received.

The following appeared in the *St. Louis Post-Dispatch* on March 21 and the Council felt that the House of Delegates should hear it. The article is headed "Health Plan Doctors Accused of Cheating: California Physicians Service Puts Fraudulent Claims at $1,000,000 a Year." The article, datelined San Francisco, follows:

Doctors have been "robbing the California Physicians Service," their own carefully nurtured voluntary health plan, of about $1,000,000 a year by over-charging and chiseling, a spokesman for the organization reported yesterday.

Asking to remain unnamed, the spokesman acknowledged in a statement to the press that published reports of the chiseling were substantially correct.

Most revealing of the published articles was one in the bulletin of the Los Angeles County Medical Society, in which the behavior of the chiseling doctors was called "larceny."

The fraudulent claims, the bulletin said, consisted mainly of claims against the C.P.S. for operations on subscribers that were never performed; for office calls never made; for major surgery that in fact was only minor surgery; for post-operative care never given and for imaginary X-rays, anesthesia and laboratory work.

The bulletin said offenders, if necessary, would be brought "before the bar of justice" and the chiseler "unmasked not only as a cheater of his fellow doctors but of the Internal Revenue Department as well."

The bulletin article, written by Dr. Paul D. Foster, secretary-treasurer of the Los Angeles County Medical Society, said the situation had gone beyond the stage where is could be handled by a slap on the wrist from a professional conduct committee and was "more within the boundaries of state courts."

The cheating was uncovered through a questionnaire distributed by C.P.S. trustees among health plan subscribers.

Dr. Foster said he had information indicating the chiseling was costing the C.P.S. about $100,000 a month.

The survey so far has turned up evidence against more than 200 doctors, Dr. Foster reported. About 11,000 California doctors have connections with the C.P.S.

The C.P.S. was established 13 years ago. It has about 850,000 subscribers.

The Council this morning received a report from the Treasurer and Chairman of the Budget Committee. It was apparent that by the end of the current year, budgeted activities of the Association would result in a deficit in the amount of about $8,000.00. Were it not for some funds currently available from the assessment voted last year, the anticipated deficit would be even greater. The Association is confronted with the necessity of making one of three choices: a curtailment of the program, continued deficit spending or an increase of income. The Council concluded that an increase in income is the proper choice. The Council was opposed to another assessment. It was voted, therefore, to propose to the House of Delegates an amendment to the by-laws to increase the dues by $10.00 effective January 1, 1953. This would bring dues to $25.00 per year, an amount still conservative in relation to dues of other states. At the present time, Missouri and four other states have the lowest dues in the country. Dues in the amount now recommended by the Council will give the Association funds not only to carry on present activities but will also provide for expansion of service in several areas considered of great future importance by the Council.

The Council regrets to announce that Dr. Robert Mueller, St. Louis, has resigned as Chairman of the Medical Advisory Committee to the Selective Service System and to the Armed Forces for the State of

Missouri. After expressing thanks to Dr. Mueller for his splendid service, the Council voted to request that he reconsider his action and that he continue to serve in this most important capacity.

Appointment of the Committee on Nominations

C. Edgar Virden, M.D., Kansas City, President, announced the appointment of the Committee on Nominations as follows:

John H. Platz Carrollton.
B. L. Murphy, Hannibal.
Jerome I. Simon, St. Louis.
Oscar P. Hampton, St. Louis.
T. L. Dwyer, Mexico.
C. G. Stauffacher, Sedalia.
F. B. Campbell, Kansas City.
Kenneth Glover, Mount Vernon, Chairman.
R. E. Breuer, Newburg.
Ben M. Bull, Ironton.

Curtis H. Lohr, M.D., St. Louis, presented the following resolution:

Whereas, The component counties of the State of Missouri are finding it increasingly difficult to obtain admission for insane, feeble-minded and tuberculous patients to the respective state hospitals as a result of their inadequate bed capacities, and

Whereas, The existing deficiencies of the size of our State hospitals make it necessary to keep many of these various types of unfortunate patients in their respective homes and communities, and

Whereas, This practice is unfair to the patients concerned and jeopardizes their safety and welfare as well as that of the general public, therefore be it.

Resolved, That the House of Delegates of the Missouri State Medical Association bring the serious situation to the attention of the Director of Public Health, the members of the Senate and the House of the General Assembly and the Governor with the respectful request that a study be initiated at once to find ways and means to make available hospital care for the insane, feeble-minded and tuberculous citizens of this state, which they need so badly and which it is the acknowledged responsibility of the state to provide.

Frederick B. Campbell, M.D., Kansas City, presented the following resolution:

Whereas, The purpose of the American Medical Education Foundation is to supply financial aid to accredited medical colleges and universities in the United States, and

Whereas, The Financial cost of providing facilities of medical education in established accredited medical colleges and universities is jeopardizing the continuation of their curricula, and

Whereas, The constituent state medical associations and societies of the American Medical Association have established plans and programs to encourage their members to participate in the Foundation, therefore be it

Resolved, By the Missouri State Medical Association that it endorses and approves the American Medical Foundation and that the Council be instructed to establish a program and plan to urge the members to contribute to this fund.

Dr. Campbell presented the following resolution:

Whereas, The American Medical Association has approved, aided and encouraged the organization of the Students American Medical Association, and

Whereas, It is recommended that societies be established at all accredited medical colleges and universities, and

Whereas, Chapters have not been established in the schools of medicine in Missouri, therefore be it

Resolved, That the Missouri State Medical Association approve the Students Medical Association and be it further

Resolved, That the schools of medicine in Missouri be urged to establish societies of the Students American Medical Association and that the Secretary of this Association be instructed to deliver copies of this resolution to the deans of the schools of medicine in Missouri.

Jerome I. Simon, M.D., St. Louis, presented the following resolution at the request of the Health Commissioner of the City of St. Louis:

Whereas, Careful, scientific observation since 1929 indicates that tooth decay is not as prevalent in individuals using water supplies containing sodium fluoride, and

Whereas, The artificial fluoridization of public water supplies was experimentally instituted and has been under continuous study since 1945, and

Whereas, These studies have shown there is no menace to the teeth and health of the persons using one part per million of sodium fluoride, and

Whereas, Such national health organizations such as the American Medical Association, American Dental Association, American Public Health Association, American Waterworks Association, the Public Health Service of the Federal Security Agency, the State and Territorial Dental Health Directors, American Society of Public Health Dentists, the State and Territorial Health Officers, the Inter-Association Committee on Health and National Research Council have endorsed the fluoridization of public water supplies, and

Whereas, In order that this effective, inexpensive and safe public health measure may be adopted by all communities within the State of Missouri, and

Whereas, Every year that fluoridation is postponed many thousands of children are deprived of the dental benefits which they might otherwise have obtained, therefore be it

Resolved, That the Missouri State Medical Association urge the fluoridation of public water supplies of the State of Missouri as rapidly as plans can be approved by the local medical, dental and health officials and the State Division of Health.

E. R. Brown, M.D., University City, discussed medical education and the supply of doctors in rural areas in Missouri and moved that a committee be appointed to determine some other method of getting physicians into rural areas than the establishment of a four year medical school of the University of Missouri. On vote the motion lost.

On motion, the House of Delegates adjourned until 4:00 p. m. on Monday, March 31.

MONDAY, MARCH 31, 1952

The House of Delegates convened at 4:00 p.m. on Monday, March 31, with F. T. H'Doubler, M.D., Springfield, Speaker, presiding.

Joseph L. Fisher, M.D., St. Joseph, gave the report of the Reference Committee on Amendments to the Constitution and By-Laws.

REPORT OF THE REFERENCE COMMITTEE ON AMENDMENTS TO THE CONSTITUTION AND BY-LAWS

Mr. Speaker, your Reference Committee on Constitution and By-Laws recommends that the Charter of this organization as issued and recorded by the Secretary of State, predicated upon action of the House at its last session and implemented and approved by the standing Committee on Constitution and By-Laws and approved by the Council of this Association in the interim between sessions be approved. I move the adoption of this portion of the report.

Upon second, the motion was passed.

Mr. Speaker, this Reference Committee on Constitution and By-Laws recommends the approval and adoption of the Constitution as brought to the floor of the House of Delegates at our last Annual Session in 1951, by the Reference Committee on Constitution and By-Laws and as printed in the July 1951 issue of The Journal of the Missouri State Medical Association and in this year's Reports of Officers and Committees for the 94th Annual Session and which has been lying over for one year's period of time as required by our existing Constitution, be approved. I so move.

On second, the motion passed.

Mr. Speaker, the Reference Committee on Constitution and By-Laws further recommends the adoption of the By-Laws as submitted and printed in the Reports of Officers and Committees for this 94th Annual Session by the Standing Committee on Constitution and By-Laws. I move the adoption of this portion of the report.

Upon second, the motion passed.

Mr. Speaker, upon the adoption of this Constitution and these By-Laws all previous constitutions and by-laws are thereby repealed. This Committee, therefore, recommends the approval of the report as submitted to date in its entirety. Mr. Speaker, I so move.

Upon second, the motion passed.

Mr. Speaker, the Reference Committee on Constitution and By-Laws recommends that the last line of Sec. 4, Chapter IV, be removed and placed in a separate section, Sec. 5, to read as follows: "Sec. 5. The Speaker and Vice Speaker shall not serve more than three consecutive terms."

Mr. Speaker, the Reference Committee on Constitution and By-Laws further recommends the following amendments to the By-Laws: That Sec. 2, Chapter III, page 37 in the Reports of Officers and Committees as submitted by the standing Committee on Constitution and By-Laws, be changed by deleting the word "corresponding" from line 2, 8 and 10, so that the section will read as follows: "Sec. 2. Each component county society shall be entitled to send each year one delegate or one alternate to the House of Delegates for each fifty full paid members or fraction thereof in the Association on December 31 of the previous year; provided, however, that each component society which is composed of two or more county societies shall be entitled to at least one delegate or one alternate from each of the counties of which it is composed; however, such delegates or alternates must reside in the county they represent.

Mr. Speaker, the Reference Committee on Constitution and By-Laws further recommends that the word "corresponding" be deleted from Sec. 8, Chapter XI, so that Section 8 shall read as follows: "Sec. 8. At some meeting in advance of the Annual Session of this Association, each component county society shall elect one or more delegates and an equal number of alternates therefor to represent it in the House of Delegates of this Association, in accordance with Chapter III, Sec. 2, of these By-Laws."

Mr. Speaker, the Reference Committee on Constitution and By-Laws further recommends that Section 8, Chapter XI, line 9 be changed to substitute the word "sixty" for the word "thirty" so that this portion of Section 8 shall read: "The Secretary of each county society shall send a list of such delegates and alternates to the Secretary of this Association at least sixty days before the Annual Session. Representation in the House of Delegates shall be contingent on compliance with the foregoing provisions."

Mr. Speaker, the Reference Committee on Constitution and By-Laws recommends that the entire section of Chapter XI, Section 8, will read as follows: "Sec. 8. At some meeting in advance of the Annual Session of this Association, each component county society shall elect one or more delegates and an equal number of alternates therefor to represent it in the House of Delegates of this Association, in accordance with Chapter III, Sec. 2, of these By-Laws. The Secretary of each county society shall send a list of such delegates and alternates to the Secretary of this Association at least sixty days before the Annual Session. Representation in the House of Delegates shall be contingent on compliance with the foregoing provisions."

The Committee submits these amendments for your consideration.

J. W. Thompson, M.D., St. Louis, informed the House of Delegates that Dr. Robert Mueller, whom the Council had asked to reconsider his decision to resign as Missouri Chairman of the Medical Advisory Committee to the Selective Service System, insists that his resignation be accepted. He asked the members of the House of Delegates to make recommendations for a successor to Dr. Mueller.

Durward G. Hall, M.D., Springfield, gave the report of the Reference Committee on Resolutions.

REPORT OF THE REFERENCE COMMITTEE ON RESOLUTIONS

Mr. Speaker, in the first session of the House of Delegates of the Missouri State Medical Association in the 94th Annual Session, the resolution, concerning fluoridation of public water supplies, was referred to the Reference Committee on Resolutions.

The Reference Committee on Resolutions met with Dr. J. Earl Smith, Health Commissioner of St. Louis, Missouri. No one appeared before the Committee in opposition to the proposal. Your Committee is of the opinion that the original resolution needs some qualifying additions concerning the statement that fluoridation as proposed has the unqualifiied approval of various professional organizations. Most valuable to your Committee's consideration was a report of the National Research Council, dated November 1951, which approves fluoridation of public water supplies in selected areas with provisions for adequate controls and safeguards. Furthermore, the American Dental Association did, in 1950, similiarly approve fluoridation of such water supplies. Due note was taken of the deleterious effects of procrastination in this matter. Your Committee has edited the proposed resolution as follows:

WHEREAS, Fluoridation of public water supplies has been scientifically investigated and reported since 1929 and the reports seem to indicate that tooth decay is not as prevalent among individuals using such water as in those whose waters have no fluoride content, and

WHEREAS, The artificial fluoridation of public water supplies was experimentally instituted and has been under scientific study since 1945 in many areas, and

WHEREAS, When used in the concentration of one part sodium fluoride per million parts of water, studies have shown there is no menace to the teeth or the general health of the users, and

WHEREAS, The endorsements of such organizations as the American Medical Association, the American Dental Association and the National Research Council have been given, but only with definite safeguards as delineated by the respective reports, therefore be it

Resolved, That the Missouri State Medical Association, predicated upon present day knowledge of developments pertinent to research in this field, views with approval the fluoridation of deficient public water supplies in given areas within the confines of this State, provided that the safeguards and controls recommended by the National Research Council shall be complied with prior to the implementation of the plan in any given area; and provide further that such plans shall include approval by the local medical and dental organizations, the local health department officials and the State Division of Health.

Mr. Speaker, it is recommended that the resolution be approved by the House of Delegates.

Upon motion, duly seconded, the resolution was adopted.

Mr. Speaker, during the meeting of the Council on Sunday, March 30, a report was given concerning Dr. Buford Hamilton's recent illness, and every one was happy to learn that he is well on the road to convalescence. At the request of the Council, your Reference Committee on Resolutions submits the following:

WHEREAS, Dr. Buford Hamilton has recently been afflicted with a serious illness, and

WHEREAS, His many friends in the Missouri State Medical Association have been happy to learn that he is well on the road to recovery, and

WHEREAS, His absence at the 94th Annual Session of the Missouri State Medical Association has been keenly felt by his many friends in the Association, therefore be it

Resolved, That the House of Delegates of the Missouri State Medical Association extend to Dr. Hamilton its sincere wishes for his speedy recovery, and be it further

Resolved, That a copy of this resolution, expressing the sentiments of the Missouri State Medical Association be spread upon the record and forwarded to Dr. Hamilton.

Upon motion, duly seconded, the resolution was adopted.

Mr. Speaker, at the first session of the 94th Annual Session of the Missouri State Medical Association, a resolution was referred to the Reference Committee on Resolutions concerning the Student American Medical Association. The referred resolution is as follows:

WHEREAS, The American Medical Association has approved,

is aiding and encouraging the organization of the Student American Medical Association, and

Whereas, Such Associations or Societies are being established at accredited medical colleges and universities, and

Whereas, It is not believed that such organizations have been established in schools of medicine in Missouri; therefore be it

Resolved, By the Missouri State Medical Association that the Student American Medical Association be approved, and be it further

Resolved, That the schools of medicine in Missouri be requested to encourage and support the Student American Medical Association, and that the Secretary of this Association deliver copies of this resolution, as approved, to the Deans of approved medical schools in Missouri.

The Reference Committee has studied and perfected this resolution as quoted and edited. It is recommended that it be approved by the House of Delegates.

Upon motion, duly seconded, the resolution was adopted.

Mr. Speaker, at the first session of the 94th Annual Session of the Missouri State Medical Association, a resolution was referred to the Reference Committee on Resolutions concerning a study to find ways and means of increasing bed capacities of the State's institutions for the mentally ill, feeble-minded and tuberculous patients. The referred resolution is as follows:

Whereas, The component counties of the State of Missouri are finding it increasingly difficult to obtain admission of mentally ill, feeble-minded and tuberculous patients to the respective state hospitals, as a result of their now inadequate bed capacities and tremendous overcrowding, and

Whereas, The existing deficiencies in the size of our various State hospitals make it necessary to keep many of these unfortunate patients in their respective homes and communities, and

Whereas, This practice is not only unfair to these patients but also jeopardizes their safety and welfare, as well as that the the general public, therefore, be it

Resolved, That the House of Delegates of the Missouri State Medical Association bring this serious situation, which is becoming progressively worse, to the attention of the State Director of Public Health, the Members of the Senate and the House of the General Assembly, and the Governor of Missouri, with the request that a study be instituted at once to find ways and means of making available the hospital care for the mentally ill, feeble-minded and tuberculous citizens of this State which they need so badly and which is the responsibility of the State.

The Reference Committee has studied and perfected this resolution as quoted and edited. It is recommended that it be approved by the House of Delegates.

Upon motion, duly seconded, the resolution was adopted.

Mr. Speaker, at the first session of the 94th Annual Session of the Missouri State Medical Association, a resolution on the American Medical Education Foundation was referred to this Committee for study. The resolution is as follows:

Whereas, The American Medical Education Foundation was sponsored by the American Medical Association, and

Whereas, The purpose of the Foundation is to supply financial aid to accredited medical colleges and universities in the United States, and

Whereas, The financial cost of providing facilities of medical education in established, accredited medical colleges and universities is jeopardizing the continuation of their curricula, and

Whereas, Constituent state medical associations and societies of the American Medical Association have established plans and programs to encourage their members to participate in the Foundation, therefore be it

Resolved, By the Missouri State Medical Association that it endorses and approves the American Medical Education Foundation, and that the Council be instructed to establish a program plan to urge the members to contribute to this Fund.

The Reference Committee recommends the approval of this resolution.

Upon motion, duly seconded, the resolution was adopted.

M. Gearhart, M.D., Bethany, gave the report of the Reference Committee on Medical Education and Public Welfare.

REPORT OF THE REFERENCE COMMITTEE ON MEDICAL EDUCATION AND PUBLIC WELFARE

Mr. Speaker, the Committee reviewed the reports of the standing committees on Medical Education and Hospitals, Hospital and Professional Relations, Alcoholism and the Council report presented to the House of Delegates on the establishment of the four year medical school. The Committee recommends approval of the reports as published. I so move.

Upon second, the report was adopted.

Paul Baldwin, M.D., Kennett, gave the report of the Reference Committee on Reports of Officers.

REPORT OF THE REFERENCE COMMITTEE ON REPORTS OF OFFICERS

Mr. Speaker, your Reference Committee on Reports of Officers and Committees wishes to commend the President, Dr. C. Edgar Virden, and the President-Elect, Dr. J. William Thompson, on the splendid addresses which they delivered before you yesterday.

The Committee considered, in addition to those addresses, the report of the Secretary, the report of the Executive Secretary, the report of the Treasurer and the report of the Council as published in "Reports of Officers and Committees" and also the special report of the Council which was brought to the attention of the House yesterday by the Chairman of the Council.

There was no opposition to these reports and your Committee recommends that they be approved. I so move.

Upon second, the reports was adopted.

W. W. Tillman, M.D., Springfield, gave a preliminary report of the Reference Committee on Technical Exhibits.

REPORT OF THE REFERENCE COMMITTEE ON TECHNICAL EXHIBITS

Mr. Speaker, the Reference Committee on Technical Exhibits has met and has visited and conferred with the Chairman of the Medical Exhibitors Association. There has been 100 per cent acceptance by the technical exhibitors of our meeting. Their praise was high and wished passed on to Mr. O'Brien and his staff a great deal of praise for improvement in this assembly. There are sixty-four exhibitors and, as we all know, these exhibitors make our meeting possible. I think also the praise should be passed on to each member of the Association who attends and visits these exhibitors for it is by visiting and conferring with them that we create the good will that is so necessary for our meeting. I move the adoption of this report.

Upon second, the report was adopted.

Victor B. Buhler, M.D., Kansas City, gave the report of the Council.

REPORT OF THE COUNCIL

The House of Delegates referred the report of the Committee on Maternal Welfare to the Council at the Sunday session. The portion of the report which asked for funds had been presented by the Committee to the Council at its January meeting and the Council felt that the Association could not make these funds available. The Committee was informed at that time. The remainder of the report is commended and the Council recommends that the House accept the report.

A situation was reported from several parts of the state of the State Trachoma Hospital at Rolla sponsoring examination of school children for trachoma, with a great number of diagnoses made of trachoma. In a number of checked instances, competent ophthalmolo-

gists disagreed with the diagnosis. The problem was presented to the Council for two reasons—that it was felt the diagnoses should be made more carefully and the wrong diagnosis causes parents to become too much concerned and confused. The Council's action was to refer the matter to the Committee on Conservation of Eyesight for study and to report back to the Council at its next meeting and that a letter be sent to the Director of Health asking his clarification of the present program.

The third item that came before the Council this morning resulted in a resolution being adopted. For some time several organizations, and more recently the National Foundation on Infantile Paralysis, have asked the Association to sanction their independent voluntary method of obtaining funds. It was the thought of the Council that it could not approve or disapprove the methods of obtaining voluntary funds for any one particular organization and that, secondly, because of the local situation, many of these funds were solicited by the United Fund campaign. Therefore, the following resolution was adopted:

WHEREAS, Many national foundations have made great financial and moral contributions to medical research, patient care and to public and professional education in combatting the dreaded diseases, poliomyelitis, tuberculosis, cancer, arthritis, heart disease and others, and

WHEREAS, The annual fund raising campaigns for these foundations have made it possible for them to assist thousands of afflicted persons, and

WHEREAS, The concentrated attack of these foundations on these dread diseases would be seriously threatened if they were required on a national level to become subordinated to a federated or joint fund which would, in many instances, regiment health and welfare agencies in a single national annual fund campaign and which would tend further to destroy the independence and curtail the program of such agencies, now therefore be it

Resolved, That these national agencies be upheld in their policy of resisting the formation of a single national fund raising agency with the clear understanding that federated or joint funds at a local level when voluntarily supported by such agencies are recognized to be desirable in many cases as providing a sound and intelligent approach to the problem of fund raising and a wise way of avoiding public dissatisfaction with the multiplicity of drives that all make money raising for many purposes needlessly burdensome and inefficient.

It is believed the House will be interested in a public relations program which the Council has approved in principle and the details of which are now being worked out by our Committee on Public Policy and Public Relations. The project relates directly to the responsibilities of the medical profession for good citizenship in this historic election year.

As you know, in a statewide professional organization like ours, there is no place for narrow partisanship in our approach to public and political issues. There is, however, an important general obligation for our profession to discharge its full responsibility of citizenship in an election year. This responsibility above everything else means registering and voting.

It is our intention to conduct throughout the State of Missouri a campaign on behalf of the medical profession to encourage all citizens to register and vote. It is our hope that the first and most successful part of this campaign will be complete participation by doctors and their families in the coming election.

When the details of the program have been fully developed, you will be informed. It is our present thought that a great part of the detail work of this project will be carried on by the ladies of the Auxiliary. As they get into the task they will certainly require the sympathetic help and support of doctors in every community.

This announcement is to bring the project to your attention and to ask your help in seeing that member doctors do give the support that will be required if the project is to succeed.

At the request of the Senior Medical Staff of the Ellis Fischel State Cancer Hospital, Columbia, the Council considered the propriety of making available to schools and practitioners of osteopathy the facilities of the state hospital and the services of its staff in providing educational services to osteopaths in the field of cancer diagnosis and therapy.

The Council went on record as continuing to maintain the Association's advocacy of the highest standards of medical service and education for the people of Missouri and expressed opposition to any lowering of standards in public and private hospitals that would make the facilities of such hospitals and the services of their staffs available to unqualified persons, the inevitable consequence of which would be a lowering of standards not conducive to the best interests of the people of Missouri.

Joseph G. Edwards, M.D., St. Louis, presented the following resolution:

WHEREAS, If the present trend of government medical services and care of personnel connected not only with the Armed Services and Veterans but also for those with nonservice connected disabilities, families of veterans, members of Armed Services and some government agencies is continued, the federal hospitals will be gradually filled and more and more will be constructed at taxpayers' expense and, in effect, make all socialized government medicine.

WHEREAS, Bringing Bills S. 1140 and H. 3688 and 3305 out of committee for debate on the floor of Congress does not necessarily imply acceptance of them as now written, but it does mean that there will then be some possibility for debate and possible amendments to make them completely acceptable to the medical profession, therefore be it

Resolved, That the House of Delegates of the Missouri State Medical Association go on record as favoring the bringing of S. 1140 and the House companion bills 3688 and 3305 out of committee for discussion, debate and possible amendment to provide more efficient federal medical service. This has been advocated by the National Committee for the Improvement of Federal Medical Service affiliated with the Citizen's Committee for the Hoover report.

Upon motion, duly seconded, the House of Delegates adjourned to meet on April 2 at 1:30 p.m.

WEDNESDAY, APRIL 2, 1952

Final Session

The House of Delegates convened at 1:30 p.m., April 2, with the Speaker, F. T. H'Doubler, M.D., Springfield, presiding.

EMIL A. BURST, M.D., St. Louis: Mr. Speaker, the Committee on Credentials reports 118 Delegates, ten Councilors and four Officers registered.

Mr. T. R. O'Brien, St. Louis, Executive Secretary, read the roll of Delegates and alternates, which showed a quorum present.

Jerome I. Simon, M.D., St. Louis, upon being granted unanimous consent of the House of Delegates, presented the following:

Mr. Speaker, the announcement in the Council and by our President-Elect at the Monday Session of this 94th Annual Session of the Association concerning the resignation of Dr. Robert Mueller of St. Louis as State Advisor for the medical profession to the Selective Service System calls for appropriate recognition by this Association. Therefore, the delegates of the St. Louis Medical Society submit the following resolution:

WHEREAS, Dr. Robert Mueller has served this Association and the medical profession with honor and distinction and has given freely and willingly of his time and efforts during the mobilization of medical manpower in World War II as Missouri State Chairman of the Procurement and Assignment Service for physicians, dentists, veterinarians, etc.; and subsequently has served with distinction as advisor to the National Selective Service System for this state concerning the availability of our colleagues for induction into the armed services, and

WHEREAS, Dr. Mueller has, after these many years of service, deemed it necessary to seek relief from this particular responsibility, now therefore be it

Resolved, That this Association express its appreciation of the services rendered to and in its behalf by Dr. Robert Mueller, and be it further

Resolved, That this resolution be spread upon the minutes

of this Annual Session and that copies of this resolution be transmitted to Dr. Robert Mueller and the National Selective Service System and the Defense Department.

Upon motion, duly seconded, the resolution was adopted.

W. O. Finney, M.D., Chaffee, gave the report of the Reference Committee on Miscellaneous Affairs.

REPORT OF THE REFERENCE COMMITTEE ON MISCELLANEOUS AFFAIRS

Mr. Speaker, at the first session of the House on Sunday, the following resolution was presented and referred to the Reference Committee on Miscellaneous Affairs. It was considered by them on Monday and after debate was carried over until their meeting on Wednesday. At this time the matter was again discussed and the Officers of the Association and other interested members were heard. A motion was made and passed that the reported increase in dues be recommended for the year 1953. The essential part of the resolution is:

"It was apparent, that, by the end of the current year, budgeted activities of the Association would result in a deficit in the amount of about $8,000. Were it not for some funds currently available from the assessment, voted last year, the anticipated deficit would be even greater.

"The Association is confronted with the necessity of making one of three choices: (1) a curtailment of the program, or (2) continued deficit spending, or (3) an increase in income.

"The Council concluded that an increase in income is the proper choice. The Council was opposed to another assessment. It was voted therefore to propose to the House of Delegates an amendment to the by-laws to increase the dues by $10.00 effective January 1, 1953. This would bring dues to $25.00 a year, an amount still very conservative in relation to medical society dues of other states."

Mr. Speaker, I move the adoption of this report.

Upon second, the motion was passed.

Mr. Speaker, the Committee on Rural Medical Service offered the following amendment to their printed report:

"In view of the widely accepted idea of the development of health councils in Missouri, both inside and outside of the profession and the active interest developing in many localities.

"And considering the great use that can be made of such health councils by the doctors themselves to improve medical care of the people of rural areas.

"And remembering that the state councilors of the Medical Association are on record as approving health councils. Your committee on Rural Medical Service requests you ask the Council to re-affirm their position regarding health councils.

"And respectfully asks you consider initiating the following program.

"Procedure for securing an interest and an active co-operation of rural doctors in local health council movements.

"1. State Medical Association President request each district Councilor to discuss with and urge county medical societies to aid in the development of local health councils.

"2. Each district Councilor make personal contact with doctor or doctors in localities where district health councils are under consideration.

"3. Following the approval of the local doctor and his acceptance of the idea of taking part in the activities of the health council, the section on education (Mr. Fred Rector) in the state department of health will be asked to send representatives to discuss the matter with local organizations interested in health matters, (Farm Bureau, Parent Teachers Association, Missouri Farm Association, Red Cross, Tuberculosis Association and interested responsible citizens.) The department of health with representatives of the state health council will initiate the activation of local health council with the local doctor as an interested participant."

Mr. Speaker: I move the adoption of this amendment.

Upon second, the motion was passed.

Mr. Speaker: In the printed report of the Committee on Rural Medical Service, the Reference Committee on Miscellaneous Affairs recommends that the following addition be made to recommendation 5: "We believe this to be a worthwhile program providing it is kept under the supervision and jurisdiction of the County and State Medical Association."

Joseph L. Fisher, M.D., St. Joseph, presented the report of the Reference Committee on Amendments to the Consitution and By-Laws.

REPORT OF THE REFERENCE COMMITTEE ON AMENDMENTS TO THE CONSTITUTION AND BY-LAWS

Mr. Speaker, several other suggested changes and addition to the Constitution and By-Laws were considered and studied by this Reference Committee. Because most of these suggestions are covered in the Constitution and By-Laws in their present form, no action was taken at this time.

Upon motion, duly seconded, the report was adopted.

Mr. Speaker, it is recommended by this Committee that the Charter, Constitution, By-Laws and Standing Rules in their present form be published and mailed to all present members and be made available for mailing to all future members of the Association. I move the adoption of the recommendation. Upon second, the motion passed.

Ralph E. Duncan, M.D., Kansas City, suggested that the recommendation of the Reference Committee on Miscellaneous Affairs concerning the change in the by-laws to increase the dues by $10.00 effective January 1, 1953, be more specifically handled and moved that Chapter VIII, Sec. 1, of the by-laws read: "Section 1. The annual dues of this Association shall be $25.00, which shall be applicable . . ."

Upon second, the motion passed.

Patricia Lanier, M.D., Fulton, gave the report of the Reference Committee on Scientific Exhibits.

REPORT OF THE REFERENCE COMMITTEE ON SCIENTIFIC EXHIBITS

The Reference Committee on Scientific Exhibits for the 94th Annual Session of the Missouri State Medical Association wishes to commend the various exhibitors. The Committee wishes to recommend that the following awards be given:

1st. Rheumatism Clinic, General Hospital No. 1, Kansas City.

2nd. Testing the Drunken Driver, American Medical Association and the Missouri State Medical Association Committee on Alcoholism.

3rd. An Introduction to Fractures, Missouri State Medical Association Committee on Fractures and the American College of Surgeon's Missouri Regional Committee on Trauma.

Upon motion, duly seconded the report was adopted.

W. W. Tillman, M.D., Springfield, gave the report of the Reference Committee on Technical Exhibits.

REPORT OF THE REFERENCE COMMITTEE ON TECHNICAL EXHIBITS

Your Reference Committee for Technical Exhibits

has the customary pleasant but difficult task of selecting three exhibits for special recognition. When one recognizes that this year there are sixty-four Technical Exhibitors, all interesting, friendly and pleased with the meeting, then the difficulty of the selection is made clear. However, after considering each exhibit for its general appearance, the interest and manner of reception of the doctor by the representative and other factors such as the content and professional value of the exhibit, your Committee has selected the following:

1st. Wyeth, Incorporated, Philadelphia.
2nd. Mead Johnson & Company, Evansville.
3rd. The Upjohn Company, Kalamazoo.

Paul Baldwin, M.D., Kennett, gave the report of the Reference Committee on Reports of Officers.

REPORT OF THE REFERENCE COMMITTEE ON REPORTS OF OFFICERS

Mr. Speaker, your Reference Committee on Reports of Officers met and gave consideration to the supplementary report of the Council to the House of Delegates at 4:00 p.m., Monday, March 31. There was no objection to the supplementary report and the Committee recommends that they be approved.

Upon motion, duly seconded, the report was adopted.

DURWARD G. HALL, M.D., Springfield: Mr. Speaker, in compliance with Chapter III, Section I of the By-laws, we request unanimous consent to submit a Resolution affecting the health of the people of this State.

Upon motion, duly seconded, unanimous consent was given.

It has come to the attention of the Reference Committee on Resolutions, that throughout the year the Council of the Association has given attention to the matter of immunization of children. The Committee submits for your consideration the following Resolution:

WHEREAS, The incidence of communicable disease has been so lowered by immunization as to tempt both the medical profession and the public to take for granted the beneficial results of these procedures, and

WHEREAS, History has demonstrated that diseases such as diphtheria, smallpox, whooping cough and others, whether communicable or infectious, present a constant threat, and

WHEREAS, Immunization against such diseases has been proved beyond doubt to be a positive and safe prophylactic procedure, therefore be it

Resolved, That the House of Delegates of the Missouri State Medical Association go on record as publicly endorsing basic programs of immunization of all children as a condition of enrollment in the public schools of the State of Missouri, and be it further

Resolved, That each member of the medical profession be urged to intensify his alertness and efforts to maintain effective programs of immunization for the protection of all our people.

It goes without saying that the concept of this Resolution is in full accord with the basic principles of medicine and public health. I move its adoption.

Upon second, this resolution was approved by the House of Delegates.

Durward G. Hall, M.D., Springfield, gave the report of the Reference Committee on Resolutions.

REPORT OF THE REFERENCE COMMITTEE ON RESOLUTIONS

Mr. Speaker, at the Second Session of the 94th Annual Session of the Association, a Resolution was referred to the Reference Committee on Resolutions pertaining to Government Medical Services and specifically to Senate Bill 1140 and House Resolutions 3688 and 3305 in the Congress of the United States.

Your Reference Committee has considered this Resolution at length and Dr. J. C. Edwards of St. Louis, Missouri, who presented it to the House, appeared before the Committee. It is our belief that the thought and spirit behind the Resolution as presented is generally good, but that as far as this Association is concerned, the technics employed by the directive therein should be left for other consideration. That is, our Association should not undertake to bring the bills out of the Committee onto their bodies respective floors.

Primarily, these Bills refer to re-organization of Government Medical Services into a unified federal medical system. This change is predicated upon recommendations of the Hoover Commission in part and of a temporary Committee known as the National Doctors Committee which is interested primarily in implementing portions of the Hoover Commission report and will then be dissolved. All are agreed that there should be "no more Government in medicine but better medicine in Government." Undoubtedly savings can be accomplished by unified medical procurement of medical supplies, Federal coordination and inter-departmental allocation of hospital bed credits, as well as use of personnel in times of stress, to mention only a few.

Your Reference Committee, with the American Medical Association and others, feels the bills are now in an imperfected status, but sees no reason why this Association should not go on record of favoring the principles of these Bills and urge active and full Committee hearings. Every effort should be made to enlighten Federal Medical Services toward the elimination of duplication, the reduction of existing excessive expenditure of the taxpayer's money and toward the reduction of over-lapping use of scarce medical facilities and personnel. It is, therefore, recommended that the Resolution as reedited and presented be passed as follows:

WHEREAS, Based on the Medical Activities Report of the bipartisan Hoover Commission and general observations of the physicians of this Association, the existing Federal Medical Services are engaged in a wasteful federal hospital building program, and

WHEREAS, Existing laws and policies allow the admission to Federal hospitals of more and more personnel connected not only with armed services and veterans but also those with non-service connected disabilities, governmental agencies, and others, and

WHEREAS, The Government is acquiring increasing obligations in the Federal medical field with questionable understanding of their ultimate costs or effects, and

WHEREAS, These wasteful policies and mounting expenses may eventually lead to more Government control of medicine rather than better medicine and utilization of medical facilities in Government, and to more inflation, all of which would be to the detriment of the individual citizen's initiative and responsibilities and would depreciate the quality of medical service rendered to the public, and

WHEREAS, The existing Congressional Senate Bill 1140 and House Resolutions 3368 and 3305 are now in Sub-Committee hearings and are understood to be opposed by Federal Executive Department authorities and administrators but which Bills will generally implement the portions of the Hoover Commission Report establishing a unified Federal Medical system, especially if they are carefully considered and amended as suggested by the National Doctors Committee and the American Medical Association, therefore be it

Resolved, That this Association generally approves the spirit of these Bills which will effect the greatest savings by a carefully coordinated and implemented Federal Medical Service, but recognizes the need for carefully controlled amendments and safeguards, and be it further

Resolved, That this Association favors bringing said Bills to active and full Committee hearings at the earliest practicable date with the ultimate end in view of having them amended and then brought to the attention of their respective Assemblies for final enactment during the current session of Congress; and that copies of this Resolution be forwarded to the Senate Committee on Expenditures of the Executive Departments headed by the Honorable John L. McClellan of Arkansas, and the House Committee on Expenditures in Executive Departments headed by the Honorable William L. Dawson, plus all Congressmen from Missouri and the Senators from Missouri.

Upon motion, duly seconded, this resolution was adopted.

Mr. Speaker, there was referred to your Reference Committee on Resolutions at the Monday Session of this 94th Annual Meeting of this Association, a Resolution by the Council concerning fund-raising campaigns by National Foundations affecting health, medical research, and education.

Your Reference Committee has carefully considered this Resolution and believes that the House of Delegates should understand that this is directed primarily against a single, nationwide fund-raising agency, sponsored at least in part by a government bureau rather than the inclusion of such drives in local fund or Community Chest campaigns, involving the local quotas for such agencies. Before this point was clearly understood your Committee was against the Missouri State Medical Association participation in this point which is moot at local levels. With this understanding, it is recommended by your Committee that the following edited Resolution be passed:

Whereas, Many national foundations have made actual financial and moral contributions to medical research, patient care and to public and professional education in combating the dreaded diseases as poliomyelitis, tuberculosis, cancer, arthritis and crippling diseases, heart disease and others; and

Whereas, These foundations have made contributions which resulted in direct aid to thousands of afflicted persons through annual but individual fund-raising campaigns; and

Whereas, This Association believes the concentrated attack of said foundations upon the dreaded diseases would be seriously threatened if they were required to become subordinated to a federated or joint fund at the national level which would in many instances regiment health and welfare agencies into a single *national* annual fund campaign which would further tend to destroy the independence and curtail the programs of these agencies, now, therefore, be it

Resolved, That these national agencies, including the National Foundation for Infantile Paralysis and others be upheld in their policy of resisting the formation of a single national fund-raising agency with the clear understanding, however, that united or joint fund-raising campaigns at local levels, such as united funds and Community Chests when voluntarily supported by such agencies are considered desirable in many cases as providing a sound and intelligent approach to the fund-raising problem which will in many instances avoid public dissatisfaction with the multiplicity of drives that often make money-raising for worthy purposes burdensome and inefficient to the individual, and be it further

Resolved, That copies of this Resolution be furnished the Federal Security Agency of the Government, the National Foundation for Infantile Paralysis and headquarters of other interested foundations.

Upon motion, duly seconded, this resolution was adopted.

Mr. Speaker, it has been brought to the attention of the Reference Committee on Resolutions that, in addition to the Resolution pertaining to the need of increased bed capacities in the State's eleemosynary institutions, passed by the House of Delegates on March 31, 1952, there is an additional problem involving funds appropriated by the State Assembly in order to operate existing or expanded facilities in these necessary institutions. Your Reference Committee, therefore, recommends the passage of the following Resolution:

Whereas, There is pending before the Missouri State Assembly at this time House Bill 496 (Omnibus Appropriation Bill) wherein it seems probable that general reductions will result in appropriations, to the Missouri State Hospital for mental diseases and the Missouri State Hospital for Tuberculosis at Mt. Vernon, Missouri, beneath the carefully calculated budget required for the continued operation of this and other facilities in an efficient and practical manner, and will decrease the number of admissions, as well as the size and quality of the staff.

Whereas, The reduced funds available under this Bill will not permit continuation of the fine professional service record established by these State hospitals because of insufficient funds with which to continue or employ the needed personnel to bring about the approved program of these institutions, now therefore be it

Resolved, That the House of Delegates of Missouri State Medical Association bring this situation immediately, through its Secretary, to the attention of the members of the Senate and House of the General Assembly (including the Conference Committee), as well as the Governor of Missouri, with a request that every consideration be given to the urgent need of providing adequate funds, as well as facilities in order to carry on existing plans and the presently approved programs of these State institutions.

Upon motion, duly seconded, this resolution was adopted.

NOMINATION FOR PRESIDENT-ELECT

R. E. Breuer, M.D., Newburg, nominated E. Claude Bohrer, M.D., West Plains, for President-Elect.

Upon motion the Secretary was instructed to cast the unanimous ballot of the House of Delegates for E. Claude Bohrer, M.D., West Plains, for President-Elect. The Secretary cast the unanimous ballot of the House of Delegates for Dr. Bohrer for President-Elect and the Speaker declared Dr. Bohrer so elected.

E. Claude Bohrer, M.D., West Plains: Mr. Speaker, Members of the House of Delegates and guests, this is the highest honor that a man in the State of Missouri can receive and for that I am deeply and greatly appreciative. I am just a general practitioner 'way down in the Ozarks and this means a tremendous amount to me to receive this honor. I hope that I can serve the Association to the best interest of the profession and I shall attempt to do so to the utmost of my ability. I would like publicly to thank members of Councilor District Nine who for fourteen years have kept me as their Councilor. That has been quite an honor but, of course, the present honor supercedes anything I could hope to receive. I thank you deeply.

Kenneth Glover, M.D., Mount Vernon, gave the report of the Committee on Nominations.

REPORT OF COMMITTEE ON NOMINATIONS

For Vice Presidents: Clinton W. Lane, M.D., St. Louis; P. T. Bohan, M.D., Kansas City; J. Will Fleming, Jr., M.D., Moberly.

For Delegates to the American Medical Association: Paul Baldwin, M.D., Kennett, Julius Jensen, M.D., St. Louis, alternate; A. S. Bristow, M.D., Princeton, J. W. Shaw, M.D., Fayette, alternate.

For Speaker of the House of Delegates: Victor E. Scherman, M.D., St. Louis; Vice Speaker, Joseph L. Fisher, M.D., St. Joseph.

On motion, duly seconded, these officers were declared elected.

The Secretary reported the results of the election of Councilors as follows:

1st District—Donald M. Dowell, M.D., Chillicothe.
3rd District—R. O. Muether, M.D., St. Louis.
5th District—J. Loren Washburn, M.D., Versailles.
7th District—Victor B. Buhler, M.D., Kansas City.
9th District—J. H. Summers, M.D., Lebanon.

J. William Thompson, M.D., St. Louis, was installed as President of the Association.

The following appointments to committees to fill expired terms and chairmanships were announced by Dr. Thompson and approved by the House of Delegates:

Scientific and Protgraduate Work: Ralph R. Coffey, Kansas City, Chairman; Paul Maddux, Springfield; Daniel L. Sexton, St. Louis. Associate Members: Joseph L. Fisher, St. Joseph; Paul O. Hagemann, St. Louis; Carl R. Ferris, Kansas City; Walter W. Tillman, Springfield; F. R. Crouch, Farmington; John O'Connell, Overland.

Defense: C. E. Hyndman, St. Louis, Chairman; O. B. Zeinert, St. Louis; L. P. Forgrave, St. Joseph.

Public Policy and Public Relations: W. F. Francka, Hannibal, Chairman; J. W. Thompson, St. Louis; E. C. Bohrer, West Plains; G. W. Winn, Boonville; J. W. Allee, Columbia.

Medical Education and Hospitals: R. M. S. Barrett, St. Louis, Chairman; M. K. Underwood, Rolla; W. J. Ferguson, Sikeston; E. C. Schmidtke, Columbia.

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1. *Perloff, Wm. H. (1951), Treatment of the Menopause. II. American J. Obst. & Gynec., 61:670, March.* 2. *Reich, W. J., et al. (1951), A Recent Advance in Estrogen Therapy. I. American J. Obst. & Gynec., 62-427, August.*

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Cancer: E. C. Ernst, St. Louis, Chairman; Marvin Napper, Springfield; Thomas Martin, St. Louis. Associate Members: Jack Hill, Kansas City; F. J. McCoy, Kansas City.

Medical Economics: A. P. Rowlette, Moberly, Chairman; Royce Bohrer, Jefferson City.

Mental Health: E. F. Hoctor, Farmington, Chairman; John M. Sartin, Springfield; Thomas R. Thale, St. Louis.

Maternal Welfare: Kenneth E. Cox, Kansas City, Chairman; E. Lee Dorsett, St. Louis; Leo J. Hartnett, St. Louis. Associate Members: G. L. Miller, Kansas City; William See, Columbia.

Infant Care: D. B. Landau, Hannibal, Chairman; R. J. LaDriere, St. Louis; E. J. Schwartz, Springfield. Associate Members: J. S. Sennott, Jefferson City; Guy N. Magness, University City.

Health and Public Instruction: A. W. McAlester, III, Kansas City, Chairman; J. Earl Smith, St. Louis.

Constitution and By-Laws: Durward G. Hall, Springfield, Chairman; W. L. Allee, Eldon; Paul Baldwin, Kennett.

Fractures: D. L. Yancey, Springfield, Chairman. Associate Members: Jacob Kulowski, St. Joseph; B. L. Murphy, Hannibal; Richard H. Kiene, Kansas City; Thomas G. Otto, Cape Girardeau.

Conservation of Eyesight: C. Souter Smith, Springfield, Chairman; Robert Mattis, St. Louis. Associate Members: John McLeod, Kansas City; G. J. Tygett, Cape Girardeau; George Hornback, Hannibal; C. H. Brady, Sedalia; Theodore E. Sanders, St. Louis.

Control of Venereal Disease: A. W. Neilson, St. Louis, Chairman; E. M. Cannon, St. Louis. Associate Members: R. J. Murphy, Kansas City; James C. Cope, Columbia.

Industrial Health: H. M. Roebber, Bonne Terre, Chairman; Vencel W. Hollo, St. Louis; F. L. Feierabend, Kansas City.

Diabetes: William H. Olmsted, St. Louis, Chairman; Blaine Z Hibbard, Kansas City. Associate Members: Vincent J. LoPiccolo, St. Louis; A. W. Hanss, Springfield.

Anesthesiology: Carl K. Ness, St. Joseph, Chairman; Joseph A. McNearney, Richmond Heights; Merritt H. Kimball, Kansas City.

Physical Medicine: C. Stewart Gillmor, Kansas City, Chairman; Sedgwick Mead, St. Louis; R. A. Ritter, Cape Girardeau.

Tuberculosis: Paul Murphy, St. Louis, Chairman; I. J. Flance, St. Louis; E. E. Glenn, Springfield; Lawrence E. Wood, Kansas City; J. L. Mudd, St. Louis; C. A. Brashear, Mount Vernon; W. P. McDonald, St. Joseph; F. E. MacInnis, Kansas City; H. L. Greene, Hannibal.

Study of Cardiac Diseases: E. Lee Shrader, St. Louis, Chairman; H. W. Carle, St. Joseph; V. Bryce Ballard, Kansas City. Associate Members: E. J. McIntire, Carthage; Earl L. Loyd, Jefferson City.

Hospital and Professional Relations: Paul N. Johnstone, Kansas City, Chairman; Joseph L. Fisher, St. Joseph; Hollis Allen, St. Louis; C. G. Stauffacher, Sedalia; Stanley S. Peterson, Springfield.

Rural Medical Service: A. E. Spelman, Smithville, Chairman; R. W. Kennedy, Marshall; W. A. Broyles, Bethany; W. J. Shaw, Fayette; Ray Johnson, Jr., Louisiana; Kenneth Glover, Mount Vernon; Martin Hart, Salem; C. C. Castles, Caruthersville; A. S. Bristow, Princeton.

Alcoholism: Ralph E. Duncan, Kansas City, Chairman; S. D. Smith, Columbia; Kenneth Coffelt, Springfield; Joseph B. Kendis, St. Louis; George W. Forman, St. Joseph.

The House of Delegates, upon motion duly seconded, adjourned *sine die*.

THE COUNCIL

The Council met on April 2, 1952, following the last session of the House of Delegates of the 94th Annual Session. J. W. Thompson, M.D., President, presided.

Victor B. Buhler, M.D., Kansas City, was reelected Chairman of the Council and took the chair.

W. S. Sewell, M.D., Springfield, was reelected Vice Chairman of the Council.

H. E. Petersen, M.D., St. Joseph, was reelected Secretary of the Association.

C. E. Hyndman, M.D., St. Louis, was reelected Treasurer of the Association.

The new members of the Council were introduced: R. O. Muether, M.D., St. Louis, Councilor of the Third District; J. Loren Washburn, Versailles, Councilor of the Fifth District; J. H. Summers, Lebanon, Councilor of the Ninth District.

The time and place of the next meeting of the Council was left to the Chairman and the Executive Secretary to decide.

REGISTRATION AT NINETY-FOURTH ANNUAL SESSION

First Councilor District—32

Andrews, B. W., St. Joseph
Bauman, H. C., Maryville
Bristow, A. S., Princeton
Bristow, George B., Princeton
Brumm, Harold J., St. Joseph
Carle, H. W., St. Joseph
Daley, Frank R., Hamilton
Dawson, Lerton V., Excelsior Springs
Dixon, John R., Brookfield
Dowell, Donald M., Chillicothe
DuMont, C. C., St. Joseph
Dwyer, R. D., N. Kansas City
Fisher, Joseph L., St. Joseph
Forgrave, Paul, St. Joseph
Fuson, W. A., Trenton
Gearhart, M., Bethany
Grant, C. S., St. Joseph
Imes, E. D., Maryville
Knox, Earl R., Kansas City
McCracken, S. R., Excelsior Springs
McDonald, Wilbur P., St. Joseph
Mairs, E. J., Trenton
Mundy, H. F., St. Joseph
Nixon, Edward E., Gallatin
Petersen, H. E., St. Joseph
Pickett, C. P., Princeton
Platz, John H., Carrollton
Quisito, J. M., Trenton
Saferstein, T. H., St. Joseph
Smith, Clifton, St. Joseph
Spelman, Arch, Smithville
Wilson, Fred K., Winston

Second Councilor District—28

Baker, Josephine, Moberly
Barnett, Floyd A., Paris
Barrymore, Eugene, Bowling Green
Campbell, James E., Macon
Canella, J. M., Hannibal
Chilton, James C., Hannibal
Cohrs, Clarence C., Moberly
Davis, Landis Y., Canton
Ellis, Sam T., Hannibal
Fleming, J. W., Jr., Moberly
Fleming, Thomas S., Moberly
Francka, W. F., Hannibal
Freeman, Spencer L., Kirksville
Goodrich, Howard B., Hannibal
Greene, H. L., Hannibal
Hawkins, G. W., Salisbury
Hooker, John H., Clarksville
Jennings, P. W., Canton
Johnson, Edward M., Macon
Kibbe, John H., Monroe City
Landau, Daniel B., Hannibal
Lewellen, Chas. H., Louisiana
Miltenberger, Val E., Kirksville
Murphy, B. L., Hannibal
Pipkin, Walter D., Monroe City
Rowlette, A. P., Moberly
Smith, W. J., Hannibal
Walterscheid, J. H., Hannibal

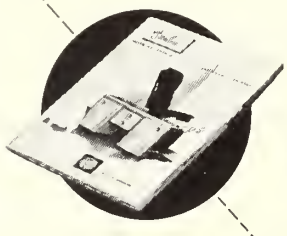
Third Councilor District—305

Abell, Walter E., St. Louis
Alford, L. B., St. Louis
Allen, Henry C., St. Louis
Allen, Hollis M., St. Louis
Allen, William E., St. Louis
Arneson, A. N., St. Louis
Bartlett, Robert W., St. Louis
Bartlett, Willard, Jr., St. Louis
Baumgarten, Walter Jr., St. Louis
Beam, Sim F., St. Louis
Beckette, Edmund S., St. Louis
Benincasa, Anthony V., St. Louis
Benjamin, D., St. Louis
Berg, Ralph, St. Louis
Bergman, Hugo F., St. Louis
Blache, J. Owen, St. Louis
Black, William D., St. Louis
Bockelman, Clifford H., Brentwood
Boemer, L. C., St. Louis
Bohne, W. R., St. Louis
Bondurant, B. H., St. Louis
Bowerman, Harold H., St. Louis
Bowersox, W. A., St. Louis
Bromberg, Leon, St. Louis
Brooks, Clifton R., St. Louis
Brown, Seymour, St. Louis
Bryan, Wm. T. K., St. Louis
Buddy, Edw. P., St. Louis
Burford, C. E., St. Louis
Burford, E. H., St. Louis
Burns, Francis R., St. Louis
Burns, Francis J., St. Louis
Burst, Emil A., St. Louis
Byrne, John E., St. Louis
Campbell, Cecil S., St. Louis
Campos, F. J., St. Louis
Carroll, George, St. Louis
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Cummings, James H., St. Louis
Czebrinski, E. W., St. Louis
Dalton, Arthur R., St. Louis
Danis, Peter G., St. Louis
Davie, Joseph, St. Louis
Davis, Martin W., St. Louis
Day, Anthony, St. Louis
Devine, John B., St. Louis
Diehr, A. H., St. Louis
Dorsett, E. Lee, St. Louis
Doyle, Charles R., St. Louis
Drews, L. C., St. Louis
Dripps, Roy C., St. Louis
Eades, D. W., St. Louis
Earp, Ralph K., St. Louis
Eastwood, Douglas W., St. Louis
Eberle, John P., Glendale
Edwards, Joseph C., St. Louis
Eiseman, Ben, St. Louis
Elam, James O., St. Louis
Ellersieck, Dorothy, St. Louis
Elmer, Warren P., St. Louis
Ernst, E. C., St. Louis
Ernst, E. C. Jr., St. Louis
Eversoll, N. J., St. Louis
Falk, O. P. J., St. Louis
Fischer, Erich, St. Louis
Feldman, David, St. Louis
Fitzgerald, Leo P., St. Louis
Foster, Howard M., St. Louis
Fox, Robert E., Richmond Heights
Franklin, Max S., St. Louis
Freund, Samuel J., St. Louis
Fries, Armand D., St. Louis
Fryer, Minot P., St. Louis
Funsch, E. C., St. Louis
Gafney, Geo. T., St. Louis
Gallagher, J. F., St. Louis
Glassberg, B. Y., St. Louis
Glenn, Joseph E., St. Louis
Goebel, Joan, Clayton
Gorla, Wayne O., St. Louis
Graul, Elmer G., St. Louis
Grindon, Joseph Jr., St. Louis
Grogan, F. M., St. Louis
Guccione, Joseph B., St. Louis
Gundelach, C. A., St. Louis
Gunn, Walter T., St. Louis
Hackmeyer, R., St. Louis
Haffner, Heinz, St. Louis
Hall, Lee A., St. Louis
Hall, Robert A., St. Louis
Hammond, John J., St. Louis
Hampton, Stanley F., St. Louis
Hanlon, C. Rollins, St. Louis
Hansel, French K., St. Louis
Harrel, Alex, St. Louis
Harrison, L. B., St. Louis
Hassett, Henry A., St. Louis
Heinemann, Sol, St. Louis
Heinrichs, J. C., St. Louis
Henschel, Eugene V., St. Louis
Hickey, Robert F., St. Louis
Hines, Arthur A., St. Louis
Hobart, Carl, St. Louis
Hofstatter, Lilli, St. Louis
Holden, Raymond F. Jr., St. Louis
Holdenreid, W. E., St. Louis
Howard, R. J., St. Louis
Huggins, Albert M., St. Louis
Hummel, Anton J., St. Louis
Hunter, Theo. H., St. Louis
Hutton, J. Lewis, St. Louis
Hyndman, Chas. E., St. Louis
Javaux, Everett J., St. Louis
Jensen, J. Ernest, St. Louis
Jesgar, William, St. Louis
Jolly, Benjamin N., St. Louis
Jones, Andrew B., St. Louis
Jones, O. S., St. Louis
Jordan, Walter R., St. Louis
Kane, R. Emmert, St. Louis
Kaplan, Albert, St. Louis
Karandjeff, A. D., St. Louis
Keller, Louis, Clayton
Kelly, Chas. A., St. Louis
Kerr, David N., St. Louis
Kettelkamp, G. D., Koch
Kinsella, Ralph, St. Louis
Kirchner, Walter G., St. Louis
Kistner, Wm. F., St. Louis
Klein, Arnold G., St. Louis
Klein, Bert H., St. Louis
Klein, Harry A., St. Louis
Kleinschmidt, C., St. Louis
Klemme, Roland M., St. Louis
Knese, Luke A., St. Louis
Knight, W. A. Jr., St. Louis
Kohler, Louis H., St. Louis
Koon, Bernard T., St. Louis
Korn, Robert L., St. Louis
Kountz, William B., St. Louis
Kouri, Martin F., St. Louis
Kraft, Edward O., Brentwood
Kramolowsky, H. H., St. Louis
Kromer, Charles, St. Louis
Kurz, R. F., St. Louis
LaDriere, R. J., Clayton
Lane, Clinton W., St. Louis
Lansche, E. A., St. Louis
Larsen, Kenneth, St. Louis
Lassar, G. N., St. Louis
Lawton, John T., St. Louis
Lederman, Joseph, St. Louis
Lee, E. J. Jr., St. Louis
Levy, Irwin, St. Louis
Leydig, Stanley M., St. Louis
Littmann, Lewis, St. Louis
Lohr, Curtis H., St. Louis
Lowenstein, Paul S., St. Louis
Lucido, Joseph L., St. Louis
Lund, Herluf G., St. Louis
Luedde, Philip S., St. Louis
Lurie, H. H., St. Louis
McAfee, Alan, St. Louis
McDonald, George H., St. Louis
McElvain, Robert C., St. Louis
McGuire, William A., St. Louis
McMahon, Alphonse, St. Louis
Macko, Joseph, St. Louis
Macon, Wm. L., St. Louis
Mason, Roy E., St. Louis
Mattis, Robert D., St. Louis
Max, Paul F., St. Louis
Melick, W. F., St. Louis
Merenda, Sam J., St. Louis
Merz, J. J., St. Louis
Meyer, Curtis A., St. Louis
Mier, Thomas, St. Louis
Miller, H. Edward, St. Louis
Milster, Clyde R., St. Louis
Montani, Charles, St. Louis
Moore, Neil S., St. Louis
Moragues, Vincent, Clayton
Mountjoy, Grace S., St. Louis
Mudd, J. Gerard, St. Louis
Mudd, James L., St. Louis
Mueller, Robert Jr., St. Louis
Muether, R. O., St. Louis
Mulligan, L. V., St. Louis
Munsch, A. P., St. Louis
Munsch, G. A., St. Louis
Murphy, James P., St. Louis
Murphy, John C., St. Louis
Murphy, Paul, St. Louis
Natoli, William, University City
Neilson, Arthur W., St. Louis
Nester, C. A., St. Louis
Newman, Percy, St. Louis
Nicolai, C. H., St. Louis
Norton, Wm. H., St. Louis
Obermeyer, Charles G., St. Louis
O'Brien, Robert M., St. Louis
Odell, Richard, St. Louis
Ohmoto, Masao, St. Louis
Olmstead, W. H., St. Louis
Oppenheimer, Henry E., St. Louis
O'Reilly, D. E., St. Louis
Orenstein, Jos. M., St. Louis
Paletta, F. X., St. Louis
Pampush, James J., St. Louis
Patton, John F., St. Louis
Peden, Burnet W., Clayton
Peden, Joseph, St. Louis
Pennoyer, James, St. Louis
Pernoud, F. G., St. Louis
Pfeifer, Oliver C., St. Louis
Ploehn, Emma, St. Louis
Pollock, Ellis L., St. Louis
Powell, R. V., St. Louis
Pranger, S. H, St. Louis
Pruett, Chas. E., St. Louis
Pulliam, M. J., St. Louis
Quinn, Abram T., St. Louis
Raemdonck, Alphonse J., St. Louis
Reiches, A. J., St. Louis
Rendleman, George, St. Louis
Repetto, Albert, St. Louis
Rice, Earl R., St. Louis
Ries, Douglas A., St. Louis
Riordan, L. M., St. Louis
Ritchie, Frances R., St. Louis
Roberts, Harold K., St. Louis
Roblee, Melvin A., Clayton
Rodgers, Elrie P., St. Louis
Rosenfield, Henry, St. Louis
Rosenthal, Leonard G., St. Louis
Ruddell, George W., St. Louis
Ruhling, Rudy, St. Louis
Ryan, Robert E., St. Louis
Sale, Llewellyn, St. Louis
Sante, L. R., St. Louis
Sargent, F. K., St. Louis
Sauer, W. Nicholas, St. Louis
Sauer, W. E., St. Louis
Saxton, John A. Jr., St. Louis
Schechter, Samuel E., St. Louis
Scherman, Victor E., St. Louis
Schlenker, John, St. Louis
Schlueter, Robert E., St. Louis
Schmiemeier, H. A., St. Louis
Schnoebelen, Paul, St. Louis
Scholz, R. P., St. Louis
Schuchat, W. Louis, St. Louis
Schweiss, John F., Brentwood
Sciortino, Gaspare, St. Louis
Sciortino, John S., St. Louis
Scott, Elwin P., St. Louis
Sexton, Daniel L., St. Louis
Shackelford, H. H., St. Louis
Shy, James, St. Louis
Sievers, Edw., St. Louis
Simon, Jerome I., St. Louis
Sisk, James, St. Louis
Smith, Herbert P., St. Louis
Smith, J. Earl, St. Louis
Spivy, Raymond M., St. Louis
Steinberg, Franz U., St. Louis
Stewart, Floyd, St. Louis
Stolar, Jacob, St. Louis
Strauss, Arthur E., St. Louis
Stuteville, Peter, St. Louis
Sullivan, Clement J., St. Louis
Talbott, Hudson, St. Louis
Thompson, J. Wm., St. Louis
Tjoflat, Oliver E., St. Louis
Tomlinson, W. L., St. Louis
Torin, B., University City
Tremain, I. G., St. Louis
Trotter, Francis O. Jr., St. Louis
Uhlemeyer, H. A., St. Louis
Vaughn, A. N., St. Louis
Vezeau, S., St. Louis
Von Kaenel, J. E., St. Louis
Waickman, Francis J., St. Louis
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Weyerich, L. F., St. Louis
Wiegand, Herbert C., St. Louis
Wilcox, C. V., St. Louis
Wood, Wm. G., St. Louis
Woolsey, R. Dean, St. Louis
Younge, Walter A., St. Louis
Younger, Jesse, St. Louis
Zeinert, Oliver B., St. Louis
Zillgitt, George H., St. Louis

Fourth Councilor District—118

Armstrong, John H., Kirkwood
Backlar, Joseph, Richmond Heights
Bailey, W. H., St. Louis
Bauer, Robert A., St. Louis
Beasley, L. K., St. Louis
Berger, Edward J., Clayton
Bernstorff, Paul H., St. Louis
Berwald, Irwin, St. Louis
Blackman, Nathan, St. Louis
Brossard, Pierre M., Maplewood
Brown, E. R., University City
Bussman, D. W., Clayton
Canty, E. J., St. Charles
Coldwater, K. B., Jefferson Barracks
Cook, Robert J., Brentwood
Creech, J. C., Troy
Cutler, Harry, St. Louis
Daly, John R., St. Louis
Damron, E. O., Elsberry
Denny, R. B., University City
Diehr, M. A., St. Louis
Donley, Leo F., St. Louis
Donnell, Harold E., DeSoto
Donnell, R. H., Crystal City
Dyer, Clyde P., Webster Groves
Ecker, D. B., Pacific
Efron, Jos., Rock Hill
Eisenmann, Benjamin P., New Haven
Finley, F. L., Overland
Fletes, James, St. Louis
Franklin, Harold, St. Louis
Freiheit, H., St. Louis
Finkel, B. W., St. Louis
Goodman, J. N., Glendale
Goodman, Nathaniel, St. Louis
Gowen, Leo F., St. Louis
Graeser, Richard, St. Louis
Gray, Walter C., St. Louis
Hagemann, Paul O., St. Louis
Hale, T. H., St. Louis
Hall, Eugene W., Ferguson
Hampton, Oscar P. Jr., St. Louis
Hanser, Otto C., St. Louis
Hendin, Aaron, University City
Hengen, H. E., Pattonville
Holscher, E. C., St. Louis
Howe, Louis, Brentwood
Hughes, Robert G., Creve Coeur
Jenkins, J. M., St. Charles
Jensen, Julius, St. Louis
Johnson, G. C., Marthasville
Jolly, William H., St. Louis
Jones, Augustin, St. Louis
Keller, R. M., Owensville
Kendis, Joseph B., St. Louis
Kister, George B., St. Charles
Koch, Otto W., Brentwood
Kuritz, Albert B., Little Rock, Ark.
Levey, S. A., Clayton
Lewin, Wilbur H., St. Louis
Loving, B. R., Ballwin
McCall, E. L., Brentwood
McLean, Royal C., Kirkwood
McMurray, H. C., Wentzville
McNearney, Joseph, Richmond Heights
Magness, Guy N., University City
Mayfield, J. L., Washington
Mays, Frank G., Washington
Mead, Sedgwick, St. Louis
Meador, James R., Clayton
Meagher, Arthur J., St. Louis
Nakada, J. R., Kirkwood
O'Connell, John O., Overland
Penn, R. M., Silex
Petersen, Fenton J., Richmond Heights
Phillips, Hanford, St. Louis
Prichard, Joseph A., St. Louis
Richardson, Wm. R., Union
Rutledge, John F., Crystal City
Rutledge, Paul E., Kirkwood
Schattyn, Martyn, St. Louis County
Scheele, Paul M., University City
Schmidt, C. A., Gerard
Schmidt, H. H., Marthasville

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Spitzer, Ernest, St. Louis
Stein, H. J., St. Louis
Steiner, Jerry, St. Louis
Sterling, John A., Maplewood
Stoelzle, J. D., Kirkwood
Strehlman, B. G., Union
Stuebner, R. W., Clayton
Sutter, Richard A., St. Louis
Teiber, Fred, St. Louis
Towers, O. W., St. Charles
Townsend, James A., St. Louis
Vinyard, Paul, University City
Vitale, Anthony J., St. Louis
Vitale, N. S., St. Louis
Votaw, Robert E., St. Louis
Wall, Albert, St. Louis Co.
Walther, Roy Jr., Overland
Walton, Josiah, Clayton
Weber, W. K., Normandy
Weitman, Maximilian, St. Louis
Wepprich, M. S., Washington
Westrup, Arthur W., Webster Groves
Westrup, Ellsworth, Webster Groves
Whitener, Paul R., St. Louis
Williamson, O. E., St. Louis
Wyatt, Lois C., Kirkwood
Yoskit, Harry, Festus
Yost, Walter B., St. Louis
Young, John, St. Louis

Fifth Councilor District—52

Allee, James, Columbia
Allee, W. L., Eldon
Andersen, E. J. T., Montgomery City
Atkins, James A., Columbia
Beckett, T. C., Boonville
Belden, E. A., Jefferson City
Bloom, W. A., Fayette
Bohrer, E. R., Jefferson City
Bruner, Claude R., Columbia
Cooper, Maurice E., Columbia
Cope, James C., Columbia
Cremer, Wm. J., Fulton
Dean, Francis D., Fayette
Dietrich, Karl D., Columbia
Dorris, R. P., Jefferson City
Dwyer, Thos. L., Mexico
Gardner, Joseph, Glasgow
Garner, Lynn, Jefferson City
Hall, John R., Ashland
Harrison, J. F., Mexico
Jolly, J. F., Mexico
Kallenbach, Glen, Mexico
Kauffman, Ruth, Versailles
Kelly, Marshall, Jefferson City
Kibbe, Edgar A., California
Lanier, Andrew S., Fulton
Lanier, Patricia F., Fulton
Latham, Kenyon, California
Loyd, Earl L., Jefferson City
McCall, W. K., Laddonia
McComas, A. R., Sturgeon
McHaney, John W., Jefferson City
Meinershagen, C. W., Jefferson City
Neal, M. Pinson, Columbia
Nifong, Frank G., Columbia
Ossman, J. A., Jefferson City
Overholser, M. D., Columbia
Sandy, Chas., Kansas City
Shaw, Wm. J., Fayette
Smith, Stephen, Columbia
Stauffer, H. B., Jefferson City
Stephan, A. P., Jefferson City
Stewart, William J., Columbia
Stuart, B. M., Boonville
Tarvydas, Francis, California
Taylor, L. A., Jefferson City
Thomas, Horace E., Columbia
Tinsley, John C. Jr., Columbia
Washburn, J. L., Versailles
Wendell, Margaret R., Columbia
Windmiller, M. E., Columbia
Wood, George F., Fulton

Sixth Councilor District—20

Aiken, George A., Marshall
Allen, Claude J., Rich Hill
Allen, Wm. H., Nevada
Campbell, A. J., Sedalia
Davis, C. B., Nevada
Glenn, David H., Warsaw
Hill, John J., El Dorado Springs
Kelling, Geo. A., Waverly
Kennedy, R. W., Marshall
Lawless, C. L., Marshall
Lederer, Chas. M., Warrensburg
McCorkle, E. L., Horton, Kansas
Martin, W. E., Odessa
Masterson, M. L., Richmond
Maxson, T. Reed, Warrensburg
Murray, John W., Sedalia
Richter, Wm. B., Stockton
Siegel, P. V., Smithton
Stauffacher, C. E., Sedalia
Tracy, H. A., Belton

Seventh Councilor District—73

Allen, William B., Kansas City
Becker, R. R., Kansas City
Berry, M. G., Kansas City
Bohan, P. T., Kansas City
Bruner, Robert E., Kansas City
Brust, Carl H., Mission, Kansas
Budke, Harold A., Kansas City
Buhler, Victor B., Kansas City
Campbell, Frederick, Kansas City
Carlson, Hjalmar E., Kansas City
Cheeseman, William Kansas City
Coffey, Ralph R., Kansas City
Counsell, C. M., Kansas City
Culbertson, W. A., Springfield
Danglade, James H., Kansas City
Dorsch, Ervin H., Independence
Duncan, Ralph E., Kansas City
Duncan, Wm. H., Kansas City
Elliott, B. Landis, Kansas City
Feierabend, F. L., Kansas City
Feist, George V., Kansas City
Ferris, Carl R., Kansas City
Fuhrman, Don L., Kansas City
Gilkey, Harry M., Kansas City
Gillmor, C. Stewart, Kansas City
Gist, W. W., Kansas City
Goldman, Max, Kansas City
Greene, W. Wallace, Kansas City
Growdon, John A., Kansas City
Hall, Thos. B., Kansas City
Haynes, Lee, Kansas City
Herrman, George V., Kansas City
Hines, Paul, Kansas City
Hoffman, R. Lee, Kansas City
Hollweg, K. E., Kansas City
Hunt, Claude J., Kansas City
Jansen, Robert, Kansas City
Keeler, James E., Kansas City
Kiene, Richard H., Kansas City
Kimball, Merritt H., Kansas City
Knight, John S., Kansas City
Kranson, Seymour, Independence
Kyner, Thomas A., Kansas City
Laffoon, F. L., Raytown
Leitch, C. G., Kansas City
McAlester, A. W. Jr., Kansas City
McAlester, A. W. III, Kansas City
McVay, James R., Kansas City
Mantz, Herbert L., Kansas City
Mayer, John H., Kansas City
Meyer, Paul W., Kansas City
Morgan, David B., Kansas City
Murphy, Robert J., Kansas City
Peete, Don Carlos, Kansas City
Peterson, D. Milton, Kansas City
Pipkin, Garrett, Kansas City
Porter, Louis, Kansas City
Rinkel, H. J., Kansas City
Roberts, Harold M., Kansas City
Robinson, E. Kip, Kansas City
Robinson, G. Wilse, Kansas City
Rubnitz, Leon H., Mission, Kansas
Saferstein, A. Lester, Kansas City
Schaerrer, W. C., Kansas City
Simpson, Morris B., Kansas City
Skoog, A. L., Kansas City
Stockwell, A. Lloyd, Kansas City
Thiessen, Edw. H., Kansas City
Trowbridge, Barnard, Kansas City
Virden, C. Edgar, Kansas City
White, Edwin C., Kansas City
Williams, Vincent T., Kansas City
Wood, Lawrence E., Kansas City

Eighth Councilor District—57

Ashley, Thomas E., Springfield
Beers, E. G., Seymour
Bickel, Vern T., Lamar
Blanke, O. T., Joplin
Brasher, Charles, Mt. Vernon
Busiek, Urban J., Springfield
Cardwell, Clarence, Stella
Coffelt, Kenneth C., Springfield
Cohnberg, Rosellen E., Monett
Crawford, O. B., Springfield
DeTar, B. E., Joplin
Donley, Robert R., Monett
Elkins, Ronald F., Springfield
Epps, Curtis H., Springfield
Ferguson, John P.,
Ferrell, Thomas E., Springfield
Fessenden, E. M., Springfield
Glenn, Elmer E., Springfield
Glover, Kenneth, Mt. Vernon
Grantham, Sam, Joplin
Hall, Durward G., Springfield
H'Doubler, F. T., Springfield
H'Doubler, F. T. Jr., Springfield
Hogeboom, Geo. W., Springfield
Holmes, P. A., Mt. Vernon
Isbell, Charles H., Carthage
Johnson, Wm. F., Springfield
Knabb, Harris E., Springfield
Knabb, Henry F. Jr., Springfield
Knabb, Kenneth E., Springfield
Lemmon, G. Bruce Jr., Springfield
Lockhart, C. E., Springfield
McCallum, A. J. C., Aurora
McCraw, Doyle C., Bolivar
McNew, W. T., Carthage
Maddux, W. P., Springfield
Maher, Robert W., Springfield
Maples, F. H., Mt. Vernon
Marshall, W. J., Springfield
Mickel, Arthur A., Cassville
Napper, Marvin L., Springfield
Park, W. I., Springfield
Plummer, G. C., Buffalo
Schoeberl, C. B., Joplin
Schulte, G. A., Joplin
Schwartz, E. J., Springfield
Sewell, W. S., Springfield
Simmons, Leroy, Sarcoxie
Smith, C. Souter, Springfield
Threadgill, J. M., Forsyth
Tillman, W. W. Jr., Springfield
Wakeman, J. Newton, Springfield
Whitten, M. Foster, Carthage
Williams, John W., Springfield
Wommack, Fred L., Crane
Wood, George H., Carthage
Yancey, Daniel L., Springfield

Ninth Councilor District—25

Bohrer, E. C., West Plains
Breuer, R. E., Newburg
Buckthorpe, T. C., Charleston
Burns, T. J., Houston
Butts, James D., St. James
Cooper, Claude W., Thayer
Cotton, T. W., Van Buren
Davis, Harry H., Rolla
Denney, R. W., Mountain Grove
Doubek, J. C. Jr., Steelville
Everist, Guy V., Rolla
Frame, Homer G., Mountain Grove
Gentry, M. C., Ava
Hammler, C. V., St. James
Harrell, R. E., Lebanon
Hogg, Garrett Jr., Cabool
Jenkins, Paul, Lebanon
Kozal, F. L., Salem
Lytle, Wm. R., Rolla
Siniscal, A. A., Rolla
Smith, Rollin H., West Plains
Stricker, E. A., St. James
Summers, J. H., Lebanon
Underwood, M. K., Rolla
Wiles, Jack N., Kansas City

Tenth Councilor District—45

Ashley, H. V., Cape Girardeau
Baldwin, Paul, Kennett
Biggs, Fred J. Jr., Poplar Bluff
Brandon, W. L., Poplar Bluff
Bredall, J. J., Perryville
Bull, Ben M., Ironton
Campbell, Edward D., Cape Girardeau
Canlas, E. M., Poplar Bluff
Cook, O. W., Caruthersville
Critchlow, Wm. C., Sikeston
Crowe, John T., Cape Girardeau
Dorris, G. T., Illmo
English, W. D., Cardwell
Estes, Albert M., Cape Girardeau
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Herbert, Charles T., Cape Girardeau
Hoctor, E. F., Farmington
Killion, J. J., Portageville
Kinder, Jim, Cape Girardeau
Martin, S. P., East Prairie
Miltenberger, P. C., Kennett
Nienstedt, E. J., Sikeston
Oehler, Wm. F., Cape Girardeau
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Peck, C. R., Kennett
Ricketson, G. M., Hayti
Ridings, Harold D., Cape Girardeau
Sarno, S. M., Morehouse
Seabaugh, D. I. L., Jackson
Seabaugh, D. R., Cape Girardeau
Seabaugh, Wm. O. L., Cape Girardeau
Shoss, Milton, Cape Girardeau
Taylor, Van W., Bonne Terre
Trolinger, J. H., Jackson
Watkins, Geo. L. Jr., Columbia
Wilson, C. F., Cape Girardeau
Wolff, Paul, Cape Girardeau
Zimmerman, J. A., Kennett

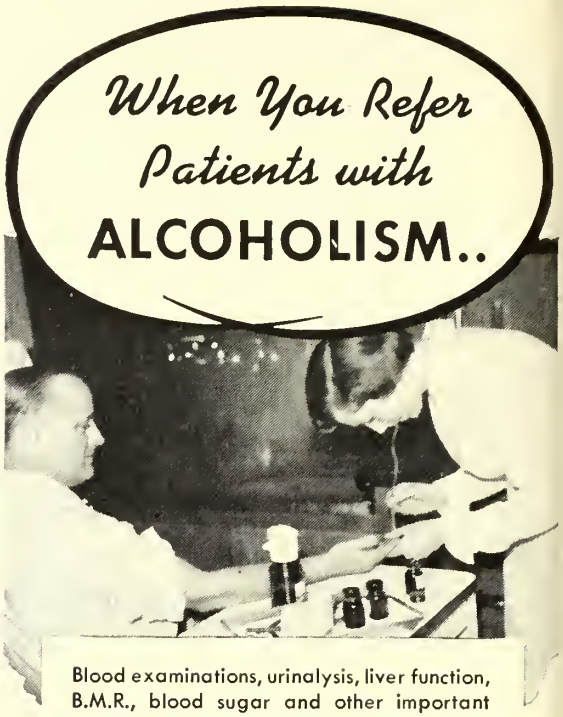
Guest Speakers—6

Alvarez, Walter C., Chicago, Ill.
Bauer, Louis H., Hempstead, N. Y.
Popper, Hans, Chicago, Ill.
Roundtree, C. R., Oklahoma City, Okla.
Sanders, R. L., Memphis, Tenn.
Thompson, Gershom J., Rochester, Minn.

Guest Physicians—70

Adriany, T., Mt. Vernon, Ill.
Aigner, B. R., St. Louis
Allen, Robert, Jefferson Barracks
Babich, Marie, St. Louis
Bacala, J. C., St. Louis
Backer, M. H. Jr., St. Louis
Berry, R. C., Lebanon, Ill.
Brah, Robert H., St. Louis
Brielmaier, Charles, St. Louis
Burke, Donald R. Jr., St. Louis
Cabelli, Victor J., Columbia
Capili, A., St. Louis
Cartier, Paul, Montreal, Canada
Claiborne, J. W., Jefferson Barracks
Collison, R. M., Oskaloosa, Ia.
Connolly, Jos. P., St. Louis
Cletsoway, R. W., Kansas City
Culkin, Thomas R., St. Louis
dela Torre, J. J., Sullivan, Mo.
Deines, H., St. Louis
Denton, P. S., St. Louis
Derrick, C. F., St. Louis
Deschenes, Theresa, Montreal, Can.
Dimayuga, C., St. Louis
Dimson, Jesus, St. Louis
Dubuque, Theo. J., Clayton
Dunner, Edward, St. Louis
Fisherman, E. W., Carmi, Ill.
Friedewald, V. F., Big Spring, Texas
Fuzzell, James, Brentwood
Gallant, A. L., St. Louis
Goldenberg, Sidney, University City
Grosby, H., St. Louis
Grossman, R. S., St. Louis
Haberer, Justin J., Christopher, Ill.
Harkins, Mitchell, St. Louis
Harrison, Harmon G., St. Louis
Hartman, H. E., East St. Louis, Ill.
Hellmann, R. H., St. Louis
Henderson, W. B., Oelwein, Iowa
Hoffman, J. O., Chester, Ill.
Hunter, Chas. H., St. Louis
Katz, Harry, St. Louis
Kohlhaas, John, Jefferson Barracks
Landis, Gillmor, St. Louis
McNamara, C. W., Toledo, Ohio
Mahe, G. A., Jefferson Barracks
Meyer, Walter, St. Louis
Parkhill, W. A., Jefferson Barracks
Pervin, K. F., Ft. Wayne, Ind.
Popp, Carol G., Mt. Vernon, Mo.
Portilla, A., St. Louis
Rife, B. V., Anna, Ill.
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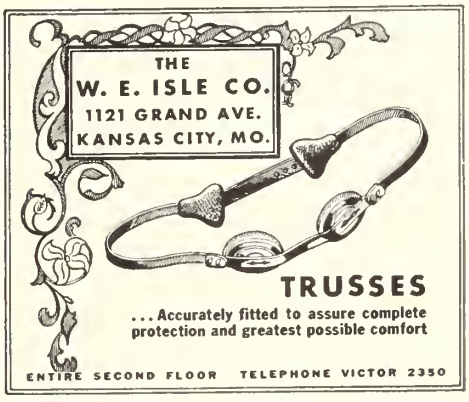
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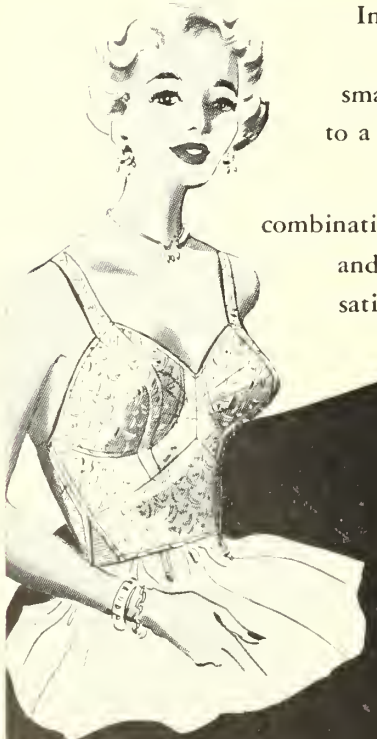
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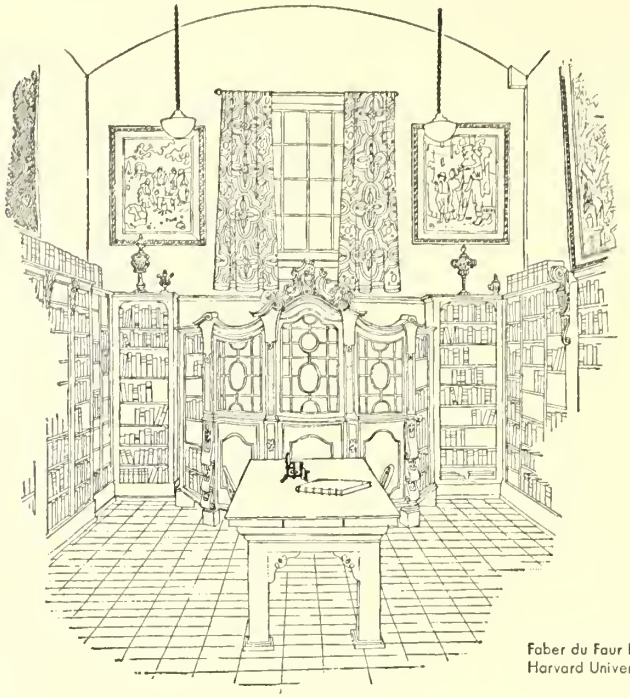
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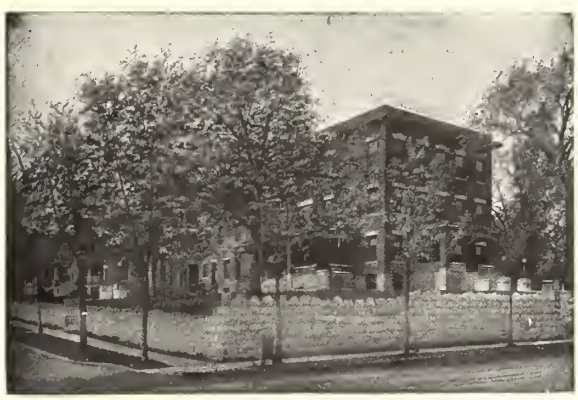
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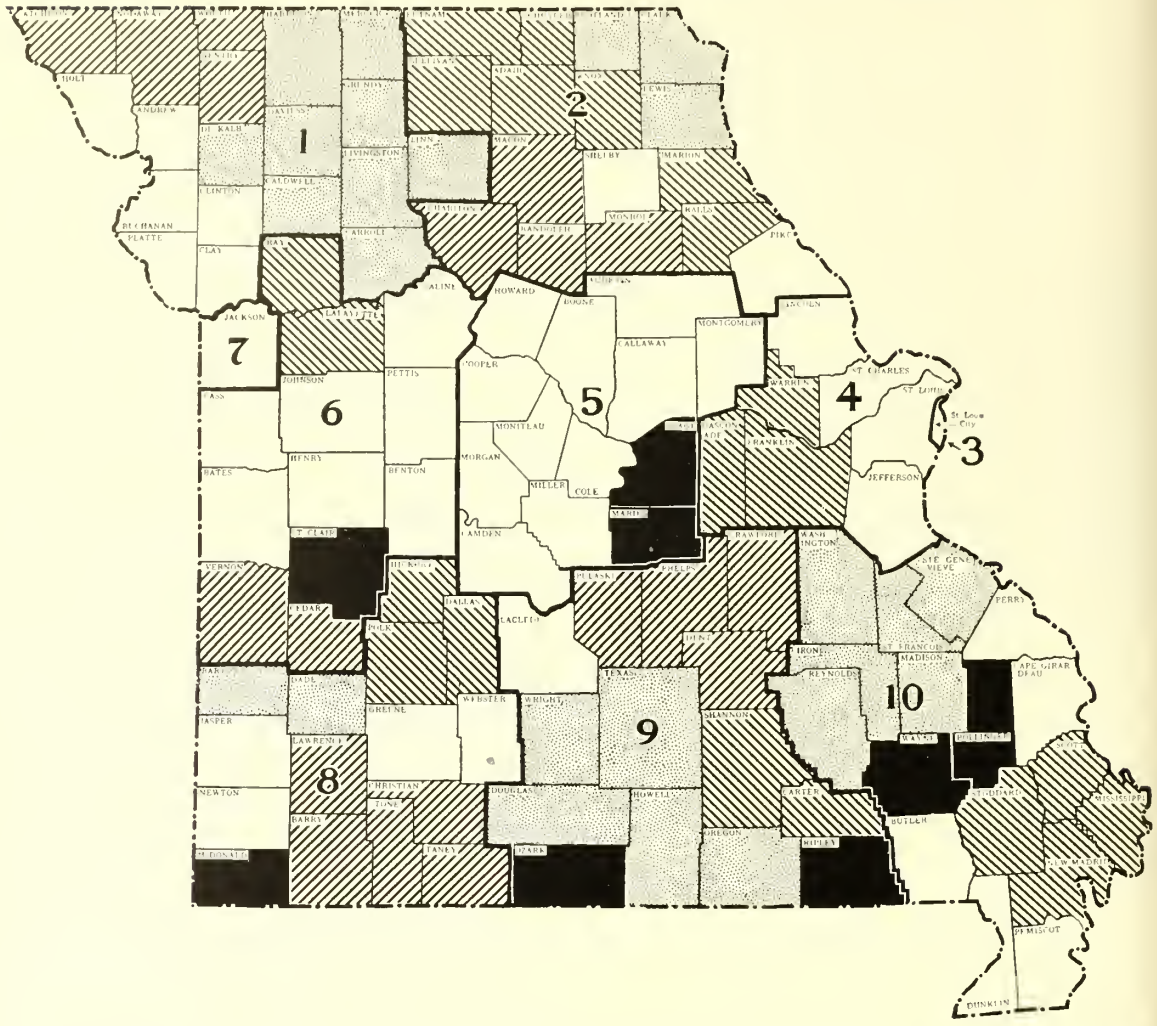
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Clinton	1	W. B. Spalding	Plattsburg	R. E. Wilbur	Cameron
Cole	5	J. G. Bruce	Jefferson City	Robert H. Tanner	Jefferson City
Cooper	5	Howard L. Wilcox	Boonville	J. C. Tincher	Boonville
Dallas-Hickory-Polk	8	Evelyn Griffin	Buffalo	George Robinson	Humansville
Dunklin	10	C. R. Peck	Kennett	E. L. Spence	Kennett
Franklin-Gasconade-Warren	4	R. J. Bozzo	Washington	F. G. Mays	Washington
Grand River Medical Society (Caldwell-Carroll-Livingston, Grundy-Daviess, Harrison, Linn, Mercer, De Kalb)	1	Wm. A. Fuson	Trenton	E. A. Duffy	Trenton
Greene	8	Wm. Paul Maddux	Springfield	Charles E. Lockhart	Springfield
Henry	6	Hugh B. Walker	Clinton	R. S. Hollingsworth	Clinton
Holt	1	F. E. Hogan	Mound City	D. C. Perry	Mound City
Howard	5	Joseph Gardner	Glasgow	Wm. J. Shaw, Jr.	Fayette
Jackson	7	Frederick B. Campbell	Kansas City	Williston P. Bunting	Kansas City
Jasper	8	W. T. McNew	Carthage	Katherine Kiehl	Joplin
Jefferson	4	Thomas A. Donnell	De Soto	J. F. Rutledge	Crystal City
Johnson	6	O. H. Damron	Warrensburg	Winton W. Wilcox	Warrensburg
Laclede	9	J. H. Hope	Lebanon	G. E. Fisher	Lebanon
Lafayette-Ray	6	E. B. Nisbet	Odessa	M. C. Johnson	Richmond
Lewis-Clark-Scotland	2	J. R. Bridges	Kahoka	P. W. Jennings	Canton
Lincoln	4	H. S. Harris	Troy	J. C. Creech	Troy
Marion-Ralls	2	D. B. Landau	Hannibal	R. J. Lanning	Hannibal
Miller	5			Carl T. Buehler, Jr.	Eldon
Mineral Area County Medical Society (St. Francois-Iron-Madison-Washington-Reynolds-Ste. Genevieve)	10	F. R. Crouch	Farmington	S. A. Lanzefame	Farmington
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Morgan	5	J. L. Washburn	Versailles	Ruth Kauffman	Versailles
Newton	8	L. E. Rolens	Granby	L. T. Taylor	Neosho
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Ozarks Medical Society (Barry-Lawrence-Stone-Christian-Taney)	8	A. J. C. McCallum	Aurora	R. R. Donley	Monet
Pemiscot	10	C. F. Cain	Caruthersville	C. C. Castles	Caruthersville
Perry	10	O. A. Carron	Perryville	J. F. Lutkewitte	St. Marys
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St. Louis City	3	Jerome I. Simon	St. Louis	J. E. VonKaenel	St. Louis
St. Louis	4	Oscar P. Hampton, Jr.	University City	M. A. Diehr	St. Louis
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1. Merrymon, M. P.: The Use of the Low Sodium Diet. *South Dakota Jour. Med. & Pharm.*, 2:57, Feb., 1949.
2. Heller, E. M.: The Treotment of Essentiol Hypertension. *Conod. Med. Assn. Jour.*, 61:293, Sept., 1949.

*Author unidentified. From Mencken, H. L.: A New Dictionory of Quotations. New York, Alfred A. Knopf, 1942, p. 1057.

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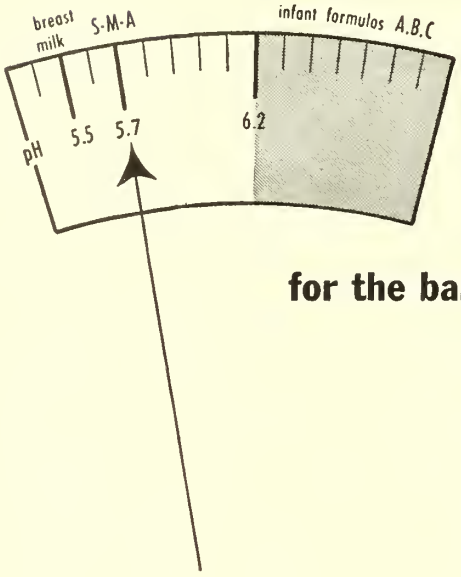
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On the basis of history and physical examination, the clinician can make only a presumptive diagnosis of brucellosis, but establishment of the diagnosis depends upon laboratory procedures which will show usually:

(1) A normal or decreased total leucocyte count with relative lymphocytosis,

(2) No diagnostic change in the sedimentation rate,

(3) A "diagnostic titer" of brucella antibodies which varies, depending upon several factors,

(4) And occasionally a positive blood culture if suitable media and multiple specimens are used for culture.

Spink, W. W., *The Laboratory in the Diagnosis of Brucellosis*, Am. Jr. Cl. Path., *22*:201-210, 1952.

Pathologically Speaking

THE AGGLUTINATION TEST FOR BRUCELLOSIS

The principle utilized in the agglutination test for brucellosis depends upon the presence of antibodies against brucella organisms in the serum of the patient to be tested. Such antibodies can occur if:

(1) The patient has actually been infected with living brucella organisms, either at the present time or at any time in the past;

(2) The patient at some time has been given a skin test with brucella antigen and derived therefrom a tissue reaction and formation of antibodies;

(3) The patient has been given at any time desensitizing doses of brucella antigen;

(4) The patient is suffering from another febrile disease that calls forth a generalized reticuloendothelial reaction with indiscriminate release of various types of antibodies, including those against brucella organisms, thus giving a "false" or anemnestic reaction for brucellosis; such titers are usually in the range of 1:40 to 1:160 but may be as high as 1:1280 or more. One should be especially wary of "false" reactions if the titer fluctuates widely up and down in a few days' interval. In this connection, one must remember that brucellosis and tularemia show frequent cross agglutination, so that a diagnostic titer in either calls for a check also for the other disease, with the higher of the two titers occurring, as a rule, in the disease which is really the offending one.

These titers represent only one facet in the diagnosis of brucellosis which otherwise is suspected on the basis of the history, signs and symptoms and is best diagnosed by blood cultures obtained during the febrile stages.

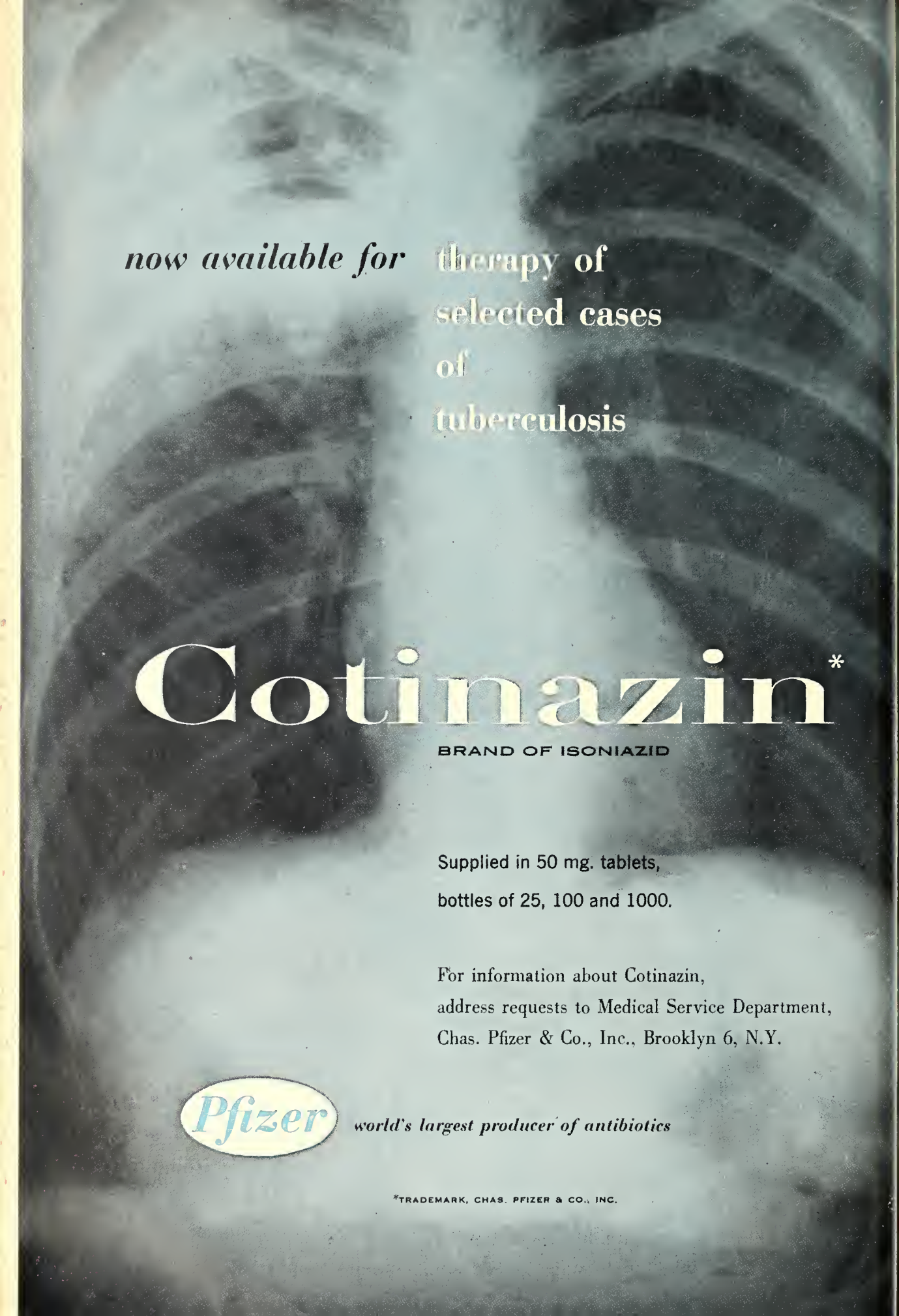
Although three types of brucella organisms are pathological for man, human serum is usually tested only against brucella abortus antigen, for in most instances, even though the patient be infected with B. suis or B. melitensis, the antibodies formed will also produce agglutination with B. abortus (a form of cross agglutination).

Significant titers are considered at the level of a 1:40 dilution if the patient has had no previous skin test or injections of brucella antigen and is not a persistent handler of livestock. One test alone, however, rarely proves anything, and therefore, the agglutination titer should be determined several times, preferably at 4 to 7 day intervals. Usually agglutinins begin to appear in 2 to 3 weeks after infection occurs and reach maximum values at 3 to 6 weeks after infection occurs. If agglutination begins at a titer of 1:20 and progresses to 1:120, it is considered significant of active disease.

In farmers, veterinarians and stockyard workers titers as high as 1:640 may be persistent without necessarily indicating that active brucellosis has ever been present.

It is to be emphasized that the agglutination titer must be determined several times at appropriate intervals and must at all times be interpreted in the light of the history of previous inoculations or the presence of other disease processes.

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Volume 49 August, 1952 Number 8

Scientific Articles

PATHOLOGIC ASPECTS OF CARCINOMA OF THE STOMACH

MALCOLM B. DOCKERTY, M.D.
ROCHESTER, MINN.

THE MATERIAL which I wish to present is based for the most part upon the examination of surgically removed stomachs. These stomachs were removed in the course of treating cancer, and the operations were performed with hope of cure. The lesions referred to here comprise perhaps less than 25 per cent of the gastric cancers seen at the Mayo Clinic in a given period but they represent early growths from the study of which the surgical pathologist is able to extract something about the etiology, the classification, the method of spread and the prognosis, based upon the findings of gross and microscopic examination.

ETIOLOGIC ASPECTS

In the year 1935, cancer of the stomach killed 35,000 patients in the United States of America. One might well inquire what is the reason for this terrific toll. In my discussion of etiology I should like to consider three points briefly. These are (1) so-called chronic gastritis, (2) polyps of the stomach and (3) gastric ulcer.

Chronic Gastritis.—Mucosal hemorrhage is a common lesion of the stomach probably because the stomach is a vascular organ. This vascularization can be demonstrated clearly in a number of ways, and one has heard how it can be visualized through the gastroscope. It can also be shown vividly by postmortem injection of the gastric vascular bed. Moreover, in the gastric mucosa this vascular bed is subject to wide fluctuations as regards filling. At one moment the stomach may appear red and congested; a moment later it may be pale and anemic. During the first phase, namely, that of vascular engorgement or congestion, myriads of tiny red spots make their appearance. They are brought about by such varied influences as hot or cold foods, alcohol, fear, fright or any of a number of other influences which may be even purely psychic. Each of these little hemorrhages is in fact a tiny infarct; occurring singly they are perhaps not important, but whenever they fuse together, an erosion or an ulcer is likely to result. Some people are apparently more susceptible than others. The lower half of the stomach seems to harbor more of these infarcts than does the upper portion, and this probably explains why patients with myriads of these hemorrhagic infarcts may still have a high concentration of hydrochloric acid. However, in the lower portion of the stomach, the trauma of digestion in the pyloric mill results in mucosal destruction to a degree not observed in the upper fundic zone.

These little mucosal infarcts produce loss of tissue, which is followed by repair. Replacement is by means of lymphocytic infiltration and fibrosis which is seen particularly in the muscularis mucosae. As regards the epithelium the all important chief and parietal cells when destroyed are not replaced in kind but by proliferated mucous cells. As a result of repeated destruction and repeated repair in these areas of the stomach, a condition is obtained which I shall call "unhealthy mucosa" or, if a better term is desired, the healed stage of chronic ulcerative or erosive gastritis. I greatly prefer this designation over that of chronic hypertrophic or chronic atrophic gastritis because, although those two conditions may appear different grossly and through the gastroscope, the microscopic common denominator is a condition of hyperplasia. The exact opposite of atrophy, regenerative hyperplasia sets the stage for malignant neoplasia. Cancer does not arise from atrophied cells.

I should like to mention, by way of illustration, that sometimes a stomach may be removed surgically because of the impression that early cancer is present, only to be found to represent what I like to call the advanced stage of chronic erosive or ulcerative gastritis. The entire lower half of the stomach may be fissured and cracked. There may be a few mucosal ulcers that have resulted from fusion of myriads of hemorrhagic

Division of Surgical Pathology, Mayo Clinic, Rochester, Minnesota.

Read at the meeting of the Missouri Society of Pathologists, Columbia, Missouri, December 1, 1951.

infarcts. On the other hand, one may encounter the unusual case in which the entire mucosa in the lower half of the stomach has been completely wiped away by this selfsame process.

In normal gastric glands, mucous cells are seen only on the surface. Their function is to preserve the stomach against autodigestion. Underneath are the pale parietal cells, with the chief cells interspersed. The parietal cells are large and pale; they are the acid cells, the ones which produce hydrochloric acid. In the stroma there is no inflammatory infiltrate. Incidentally, it is difficult to obtain a "normal" stomach for a control.

In mild gastritis hemorrhage along with areas of tissue repair may be noted, in addition to some erythrocytes and many lymphocytes. Replacement of the epithelial cells of the glands may be noted. The muscularis mucosae may be relatively thick and somewhat infiltrated. The change does not extend to involve the muscularis propria except in rare circumstances.

In the healing of a more advanced lesion there are clumps of lymphocytes in the mucosa and more marked thickening and fibrosis of the muscularis mucosae. In the epithelium there is replacement by mucous cells almost down to the bases of the glands. Under higher magnification a loss of chief and parietal cells may be noted.

Progressing up the scale one may note not only complete intestinalization of the epithelium but also cystic glandular disorganization as a result of irregular replacement following repeated destruction and repair. Lymphocytic infiltration is marked. The mucosa is more typical of the lining of the ileum or colon than of the stomach.

Perhaps the best evidence that such a "gastritis" is of a hyperplastic nature is afforded by patients with pernicious anemia. For example, a 63 year old patient had had a diagnosis of pernicious anemia in 1940. His gastric roentgenograms did not disclose any abnormality. There was good response to therapy until 1950 when he gave a six week history of indigestion. On examination the pernicious anemia seemed well controlled. No masses were felt in the abdomen. Roentgenograms gave positive evidence of a carcinoma-like defect in the stomach. At operation there were three cancers in the stomach. Grossly the uninvolved mucosa appeared to be atropic; microscopically it exhibited in marked degree the picture of hyperplasia.

Dr. Rigler cited the experience of the investigators at the University of Minnesota regarding pernicious anemia and cancer of the stomach. The experience of my colleagues and myself has been similar: 8 per cent of ninety-four patients with pernicious anemia were found at necropsy to have cancer of the stomach. Every year now in surgical pathology are seen perhaps three or four patients whose pernicious anemia was terminally complicated by carcinoma. It is interesting that treatment with liver has carried these patients into the cancer age and that the coexistence of cancer and pernicious anemia was not noticed much prior to 1929 when treatment with liver came into general use.

Gastric Polyps.—What has been said about the ulcerative stage of chronic gastritis applies also to polyps. It has been brought out clearly that polyps are followed in from 10 to 40 per cent of cases by the development of carcinoma. I firmly believe that polyps are precancerous. These polyps are localized, tumefactive areas of regenerative hyperplasia in the gastric mucosa. The surrounding gastric lining appears much like that observed in the patient who has pernicious anemia. As has been mentioned, achlorhydria is found in from 95 to 98 per cent of the cases of polyps.

Gastric Ulcer.—While I do not wish to enter into the controversy regarding how many cancers have their beginnings in peptic ulcers or how many ulcers "turn into cancer," I should like to go on record as stating that, in my opinion, ulcer of the stomach, like cancer of the stomach, rarely begins in a normal mucosa. The regenerative changes in the epithelium as seen about the healing edge of an ulcer are often duplicated in the surrounding mucosa where one finds the changes of chronic ulcerative gastritis in the healing stage.

Sometimes one may demonstrate carcinoma beginning in the edge of a benign ulcer. A benign ulcer in the ordinary course of its life history breaks down and heals perhaps four or five times so that eventually the muscularis propria becomes destroyed. The defect is healed eventually by fibrous tissue. If superimposed upon this structure carcinoma is found, I think it can be said that the carcinoma developed in the edge of an ulcer which previously had been of the ordinary, peptic type.

There are many facets which are more important from the clinical standpoint than from the pathologic in this ulcer-cancer problem and I propose to take up those details in the latter part of this discussion.

CLASSIFICATION

Of several classifications, the one I like is an old one modified after Aschoff.

1. *Ulcerative Carcinoma.*—Sixty per cent of cancers of the stomach will appear grossly like malignant ulcers; they are usually large, varying from 4 to 10 cm. across, their edges are raised, their bases are necrotic and they are usually not punched out. They plainly have a malignant "look." Sixty-five per cent of these will be associated with the presence of free hydrochloric acid. The location is most frequently the lower half of the stomach.

Perhaps 20 per cent of ulcerating gastric carcinomas exhibit the gross configuration of benign peptic ulcers. I recall an instance in which two ul-

cers were demonstrated, both of approximately the same size, both on the lesser curvature and both of similar appearance; yet one was a benign peptic ulcer and the other a grade 4 ulcerative adenocarcinoma with peptic digestion of its base. If in a specimen received in our laboratory we discover an ulcer which has the gross appearance of a benign ulcer, we apply certain rules. About 10 per cent of the ulcers which are on the lesser curvature and which are less than an inch in diameter will be malignant. The majority of those larger than this will be malignant and not benign. In the prepyloric area, one must double the percentage that will be malignant. Perforating ulcers that appear on the posterior wall near the lesser curvature are an exception to this rule. These may be 10 cm. in diameter and still be benign. The reason for this is not apparent but they seem to have a base attached to the pancreas, and this may have something to do with their inability to heal like other gastric ulcers. From 75 to 80 per cent of ulcers located on the greater curvature will prove to be malignant, regardless of gross appearance. "Stomal" ulcers rarely are malignant and, also, rarely will one discover malignancy in an ulcer which is located partly in the duodenum and partly in the stomach.

In the afore-mentioned small, ulcerating cancers which are less than the size of a quarter, with the gross configuration, the clinical history and the roentgen appearance of benign ulcer, 14 per cent will already be associated with "positive" lymph nodes. The five year survival rate will be perhaps only 60 per cent.

2. *Polypoid Carcinoma.*—This is a type of growth that extends intraluminally. This type carries a fair prognosis. A number of these polypoid growth, when they attain a large size, undergo necrosis and ulceration so that it is difficult to state just how they had their beginnings. Particular bulky forms are more often associated with achlorhydria than is ulcerative carcinoma. Multifocal origin is not infrequently seen, yet polypoid growths do not tend to involve lymph nodes early and the microscopic grade tends to be low. About 10 per cent of cancers of the stomach are of this type.

3. *Scirrhous Carcinoma.*—This is one of the most dangerous varieties of carcinoma of the stomach. It is one in which fibrosis has ensued as a response to invasion by cancer cells, and stomachs so affected shrink and shrivel while the walls become thickened. Ulceration may or may not be present—the majority exhibit minor areas of ulceration. The incidence of this condition in our surgically resected specimens is about 12 per cent. From the literature, one would gather that there are two types of this scirrhous cancer: one which seems to be generalized and which usually is regarded as irremovable, and another which is segmental. Although the literature suggests that the segmental type has a fairly good prognosis, this has not been our experience. In more than 80 scirrhous cancers of the stomach that were localized and for which wide resection was carried out with hope of cure, only 3 five year survivals were obtained.

4. *Mucous Carcinoma.*—Any one of the foregoing types may contain sufficient mucus to merit the designation of mucous or so-called colloid carcinoma. The term "colloid" is a misnomer, however, since colloid is a substance found only in the thyroid gland. These are mucous adenocarcinomas, and whenever one observes them one should recall the fact that cancer of the stomach seems to spring very frequently from a mucous or regenerative type of cell. The incidence of this is hard to estimate; grossly perhaps 15 per cent of gastric carcinomas are mucoid but if one insists on microscopic criteria, almost 30 per cent of gastric cancers will exhibit variable quantities of mucus.

5. *Carcinoma en Nappe.*—One occasionally notes a lesion of this rare and unusual type. It is also known as superficial carcinomatosis *in situ*. Rarely it may involve the entire stomach from esophagus to pylorus.

THE SPREAD OF GASTRIC CARCINOMA

All are familiar, I am sure, with the various modes of spread. Direct infiltration is the commonest form. Anteriorly, such spread may invade the anterior abdominal wall, superiorly the liver, to the right the duodenum (30 per cent of cases) and posteriorly the pancreas and periaortic nodes. Many gastric cancers are irremovable because of such spread via direct infiltration. However, Pack, Colby and others have pointed out that resection of multiple organs is well worth while when cancer extends by this method, and it is interesting that the surgical pathologist receiving a cancer of the stomach with perforation onto the colon may find no nodes involved. When the attachment to the adjacent viscera is on an inflammatory basis, as obtains in one third of the cases, the prognosis is good. When nodes are affected and there is direct involvement of the colonic wall, the prognosis is poor.

Another mode of spread, of course, is by lymphatics. Permeation of lymphatics is characteristic of scirrhous carcinomas, while embolization is more evident in the spread of the other types. Nodes are metastatically involved in 60 per cent, and with such invasion the prognosis is adversely affected.

At laparotomy 30 per cent of gastric carcinomas are seen to involve the liver via the blood vascular route, yet at necropsy the lungs are involved in only 10 per cent.

Peritoneal sedimentation is yet another form of spread which oftentimes decides the issue of surgical incurability. Krukenberg tumors and "rectal shelf" lesions are familiar examples of such a mode of dissemination.

Figure 1 illustrates the important groups of lymph nodes associated with the stomach. Malignant involvement of several groups is often noted but the cluster near the cardiac end of the lesser curvature is the one in which secondary growths

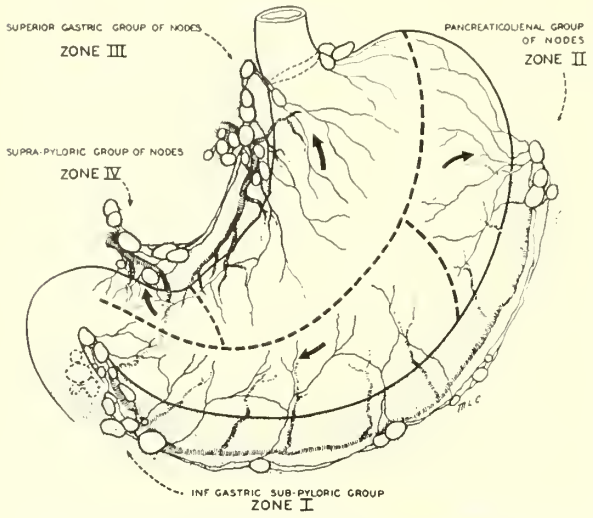


Fig. 1. Important groups of lymph nodes related to the stomach. (Reproduced with permission from Coller, F. A.; Kay, E. B., and MacIntyre, R. S.: Regional Lymphatic Metastases of Carcinoma of the Stomach, Arch. Surg. 43:748-761 (Nov.) 1941.

most frequently occur. The subpyloric group is next in order of incidence of invasion. The chain along the greater curvature is not important. Invasion of the group along the common bile duct makes the lesion incurable by means of operation.

It appears that the lymphatic plexus of the stomach is rich and, when it becomes blocked by carcinoma, reversal of lymphatic flow may occur. This is the explanation for "retrograde" duodenal spread in carcinoma of the stomach.

It has been maintained by some that total gastrectomy is the answer for small cancers in the pyloric end of the stomach. To test the validity of this claim Thomas working in our laboratory studied a large series of cases in which the tumors were all of the ulcerative type, all 3 to 5 cm. in diameter and all located in the lower half of the stomach. All were of grade 3 or 4 malignancy (Broders' method). His series was controlled as accurately as possible with reference to gross and microscopic features. One group was selected in which there was a cancer free cuff 3 to 5 cm. in length, and another group in which the cuff was shorter. He discovered that no prognostic difference was apparent in the group in which the nodes were not involved. In those cases in which the nodes were affected, the wider resections were associated with a more favorable outlook. He concluded, therefore, that the surgical treatment of gastric cancer should concern itself more with the involvement of nodes and the removal of them than with attempts to remove extra portions of the stomach.

THE TYPING AND GRADING OF GASTRIC CARCINOMAS

Dochat, working in our laboratory, devised a system of gross classification of gastric cancers in a series of some 1,200 specimens, all of which had been preserved in formaldehyde. Employing a modification of Dukes' method he grouped the growths as follows: (1) type A lesions, which were those that had not spread beyond the mucosa, (2) type B lesions, which he separated into B-1 lesions in which spread had proceeded down to but not actually through the peritoneum and B-2 lesions in which there was involvement of the peritoneum and perigastric fat, and (3) type C lesions, in which the nodes were affected. Type A lesions unfortunately were rare, constituting but 2 per cent. The incidence of type B-1 growths was approximately 10 per cent and of B-2, approximately 30 per cent. In the group in which the nodes were affected, this group constituting approximately 60 per cent of the cases, there was also a number which had peritoneal involvement in addition so that the actual figure for peritoneal involvement would be close to 90 per cent. Dochat found that in the cases of rare type A lesions, regardless of grade, 100 per cent of the patients survived for five years postoperatively. In the cases of type B-1 lesions the five

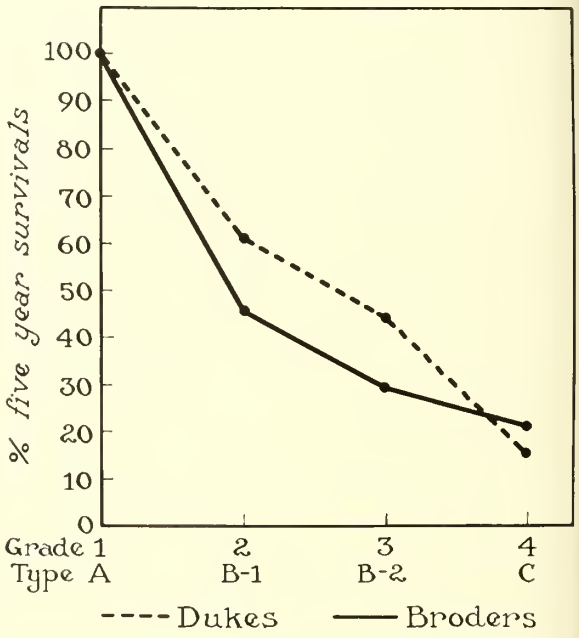


Fig. 2. Carcinoma of the stomach. Five year survival rate according to grade and type of lesion.

year survival rate was approximately 60 per cent, in the cases of type B-2 lesions it was 44 per cent and in the cases of type C lesions it was only 15 per cent. He concluded that involvement of nodes was an important factor in prognosis (figs. 2 and 3).

As regards microscopic classification, Broders' method of grading has been used at the Mayo Clinic for many years, and I thought it might be interesting to review his method of grading cancer of the stomach. Grade 1 lesions are rare in the stomach (2 or 3 per cent). In lesions of this grade, 75 to 100 per cent of the cells are differentiated and they are arranged in orderly fashion. One may identify some individual mucous cells. In grade 2 adenocarcinoma one notes the growth is forming glands which can be identified as such rather easily. The cells are smaller in general than in grade 1 lesions, but they are more variable in size and shape. The incidence of grade 2 is about 12 per cent. In grade 3 adenocarcinoma one may readily see that along with the occasional formation of a gland, atypical giant tumor cells appear. These are anaplastic, with normal and pathologic mitotic figures. In grade 4 adenocarcinoma one may have to search extensively to discover a space which is reminiscent of a gland. Eighty five per cent of gastric cancers are graded 3 or 4, and my colleagues and I feel that this is another important reason why these cancers carry a grave prognosis.

Considered on the basis of Broders' method of grading, 98 per cent of the malignant lesions of the stomach become adenocarcinomas in the sense that they are arising from and attempting to produce glandular spaces. All four grades are to be

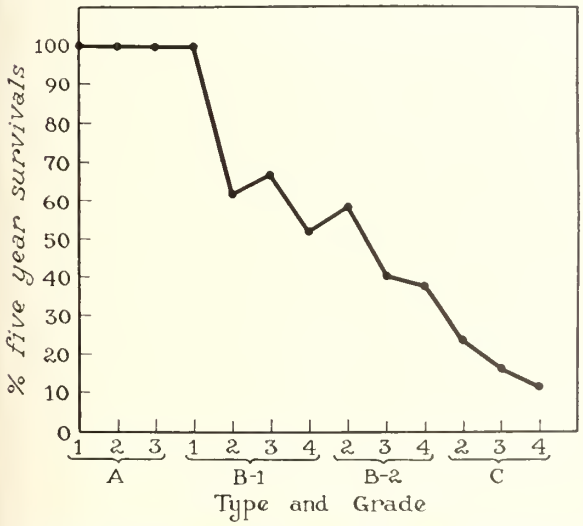


Fig. 3. Carcinoma of the stomach. Five year survival rate according to type of lesion (Dukes) subdivided according to grade (Broders).

found in each of the gross types referred to previously.

Survival rates according to grade of malignancy, in carcinoma of the stomach, are given in figure 4.

RARE LESIONS

Certain rare gastric lesions intrigue the surgical pathologist. Occasionally one encounters an adeno-acanthoma, a lesion featuring a mixture of glandular and squamous cell elements. The primary lesion is usually in the pyloric end of the stomach. The regenerating glands that produce these growths are so far back in the embry-

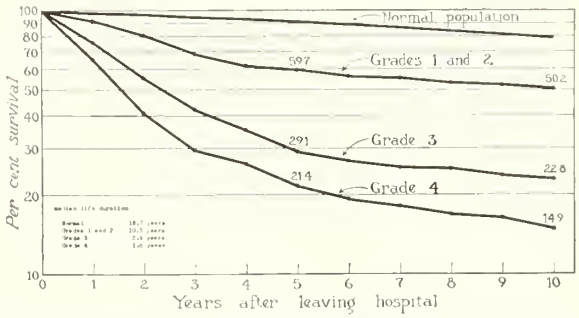


Fig. 4. Carcinoma of the stomach. Survival rates by grade of malignancy. (Reproduced with permission from Walters, Waltman; Gray, H. K., and Priestley, J. T.: Carcinoma and Other Malignant Lesions of the Stomach, Philadelphia, W. B. Saunders Company, 1942, 576 pp.)

onic line that they may differentiate in several directions. These lesions may metastasize as pure epidermoid carcinomas.

Another interesting discovery is the occurrence of multiple gastric carcinomas. The incidence of such multifocal origin, as grossly observed, is 3 per cent. Microscopically, many more are multicentric.

Rarely, one encounters a teratoma in the gastrohepatic omentum. One patient had hers from birth. It contained a mass of hair, a tooth and other tissues. In addition there was a large area of grade 3 adenocarcinoma. The overlying mucosa of the stomach was perfectly normal.

A gastroenterostomized stomach rarely exhibits a benign lesion not involving the stoma. We have observed a number of such stomachs in which carcinoma developed.

Leiomyosarcoma of the stomach poses interesting problems. More than half of these lesions exhibit large or small ulcers on their mucosal surfaces, and extensive craters may extend down into the growths. These tumors constitute a serious clinical problem since 50 per cent of patients so afflicted suffer from severe bleeding. Leiomyosarcomas of the stomach metastasize in 30 per cent of cases and always do so via the blood stream or by means of peritoneal sedimentation. They seem to spare the lymph nodes.

When one encounters a large malignant lesion of the stomach, which the surgeon can easily mobilize, occurring in a patient who feels rather well, one anticipates that it will prove to be a lymphosarcoma. My attitude toward this lesion is as follows: Possibly the growth is actually a "blue cell cancer," a "small cell cancer" or a carcinoma imitating a sarcoma. If, however, the diagnosis of carcinoma is suggested as a first choice, the patient does not get the benefit of irradiation therapy. If it is labeled a lympho-

sarcoma, on the other hand, the surgeon usually refers the patient for such therapy postoperatively. Dr. W. A. Bennett, one of my colleagues, recently performed a necropsy in a patient in which the surgeon had encountered a lymphosarcoma that was so large that it had been deemed irremovable. A diagnosis of reticulum cell sarcoma had been made on the basis of a specimen removed by the surgeon. Three years after the operation the patient had died of "galloping consumption." The complete necropsy failed to reveal even traces of lymphosarcoma in the stomach or elsewhere. The occurrence of two irradiation ulcers—I shall not call them burns—was a small price to pay for eradication of an "incurable" lymphosarcoma.

In still another interesting condition the gastric mucosa exhibits the giant folds which characterize so-called Menetrier's disease. Among other features, patients who suffer from this condition often exhibit marked edema owing to the occurrence of profound hyperproteinemia. Removal of the stomach cures the condition and results in a return of the serum proteins to normal.

Mayo Clinic.

THE SURGERY OF MITRAL VALVULAR DISEASE

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Until recent years treatment of valvular heart disease was directed entirely at relief of effects secondary to the valvular lesions. No attack was made on the primary disorder, and patients deteriorated slowly or rapidly for want of adequate therapy.[1] In 1902 Sir Lauder Brunton[2] observed that "mitral stenosis is not only one of the most distressing forms of cardiac disease, but in its severe form it resists all treatment by medicine." He expressed the wish for a means by which "one could divide the constriction in life as easily as one can after death." He also stated that he had "obtained a license and certificate to make the necessary experiments," but that it might be "some months before he could get anything done." Brunton reported no further progress, but in the years since his plea for a more satisfactory treatment of mitral stenosis many of the "necessary experiments" have been completed and effective methods have been devised for "dividing the constriction." From a disheartening beginning with severe mortality,[3] mitral surgery has been developed to the point of offering promise for many sufferers of this disabling affliction.[4]

The surgery of mitral disease has evolved in accordance with the peculiar anatomic and pathologic characteristics of the affected valve. During active rheumatic valvulitis, vegetations develop along the edges of the valve cusps. The inflamed lateral and medial margins of the cusps (the commissures) then adhere so as to form a truncated cone with a slitlike mitral orifice. The valve may eventually become thickened and even calcified, especially at its apical portions. The base of the valve often remains uninvolved and flexible; the entire cone may become leathery and unyielding.

In the first surgical attempts indiscriminate portions of the valve cusps were removed to widen the mitral funnel.[3, 5, 6] Almost without exception overwhelming mitral regurgitation followed, with heart failure and death. It was apparent that a successful surgical procedure must relieve the stenosis without producing significant regurgitation.[7] Laboratory and clinical experience soon demonstrated that excision of a portion of the posterior cusp, or of the line of fusion between the cusps, evoked little or no regurgitation so that the threat of pulmonary congestion was diminished. The anterior leaflet acts to funnel the systolic outflow of the left ventricle into the aorta and away from the mitral ring. Experience indicated that incision of a segment of this leaflet led to violent mitral regurgitation, heart failure and death.[8]

While the optimum sites for enlarging the mitral orifice appeared to be the posterior cusp or the commissures, a variety of technics were used to attack these areas. Early attempts to reach the valve were made by the insertion of a knife or valvulotome through the left ventricular wall so as to approach the valve from its ventricular aspect. It was assumed that the ventricular wall was durable and easy to handle with satisfactory hemostasis. However, there were many disadvantages to this approach: ventricular arrhythmias were frequent and often fatal,[9] the chordae tendineae deflected and impeded the path of the instrument, and the conical shape of the valve made contact with the apex difficult. Later, attempts were made to reach the valve through the auricular appendage. An instrument or finger was readily inserted without excessive blood loss or significant arrhythmias. The contour of the valve rather led the exploring instrument or finger directly to the desired point at the base of the funnel. At the termination of the procedure, the point of entry through the appendage could be tied off and the appendage amputated without deleterious effect;[10, 11] indeed, one frequent site of thrombus formation was thus eliminated.

In many instances the operator's finger inserted

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through the left auricle has been used to enlarge the mitral orifice.[12, 13, 14] Furthermore, the interior of the auricle could be examined for the determination of size and the presence of thrombi. The finger could also be used to "inspect" the valve itself for the presence of fibrosis and calci-

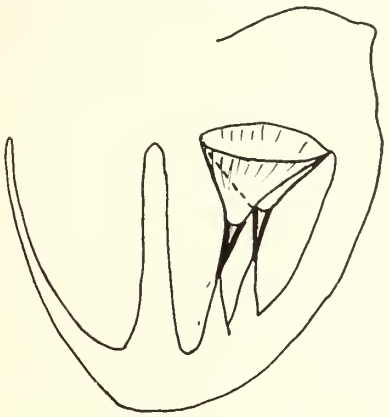


Fig. 1. Schematic diagram of normal mitral valve. The margins of the cusps are free and the orifice is wide. Left auricle is normal in size.

fication and outline the area of the orifice. Likewise, it was possible to determine the presence of mitral insufficiency by noting the impact of the regurgitated stream against the finger. Moreover, digital examination could locate the optimum site of operation (the commissures and the posterior cusp) and hence delineate the procedure of choice. If the valve is not excessively thickened

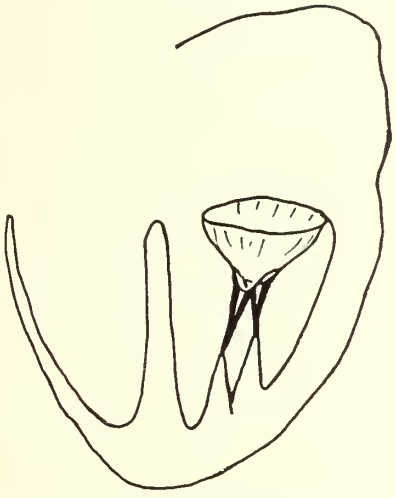


Fig. 2. Schematic diagram of stenotic mitral valve. The margins of the cusps are fused, the orifice is narrowed, the chordi tendenii are thick and short and the left auricle is dilated.

and calcified, gentle pressure applied at the point of the commissures could divide the line of fusion and widen the stenotic orifice. Regurgitation has not been increased from this maneuver. In fact, freeing of the leaflets has restored the flutter valve action of the normal valve and curtailed regurgitation.[14] Separation of the commissures by finger pressure (finger fracture) has required great care, for a misdirected tear into the leaflet has provoked critical mitral regurgitation and failure. In many patients finger fracture has been impossible because the line of fusion resisted pressure and could not be torn. In these and in other patients a knife has been inserted for incising the commissures.[15, 16, 17] Knives used to incise the valves have been simple, longhandled instruments similar to tenotomy blades, with straight or hooked cutting edges. An instrument

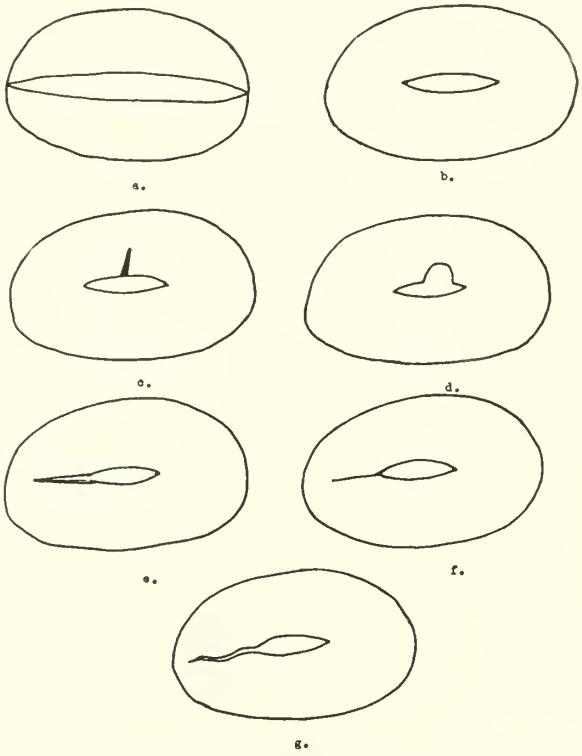


Fig. 3. Diagrams of mitral valve seen from auricular aspect. a indicates the normal valve. b is the stenotic valve with fused commissures, slitlike orifice. c illustrates early operative procedure with incision into the anterior cusp producing free regurgitation. d shows an early punch operation with removal of a portion of the anterior cusp. e is a valvulotomy with removal of a segment from the region of the commissures to enlarge the orifice without increasing the degree of regurgitation. f is commissurotomy with incision into the region of the commissure without removal of tissue. g is finger fracture.

curved to the index finger and held to the finger by a second rubber glove has been introduced alongside the exploring finger[18] for commissural incision.[17, 19] On other occasions a valvulotome was inserted so as to excise a portion of the commissures or posterior cusps,[20, 21, 22] the instrument being guided by contact of its tip with the intracardiac structures, or by the aid of direct vision through a tubelike cardioscope attached to the valvulotome. Whether the technic of simple incision or tear at the line of commissure, or whether the removal of a slice of the commissural tissue, is more desirable, will require longer observation.

One might assume that the procedure which removes no valve tissue is the one less likely to produce regurgitation. Experimental and clinical results indicate that there is little or no return of adhesion of cusps after surgical separation regardless of the technic used,[5, 13] and that removal of a wedge of tissue is not necessary to prevent the recurrence of stenosis.

A more courageous procedure has included the

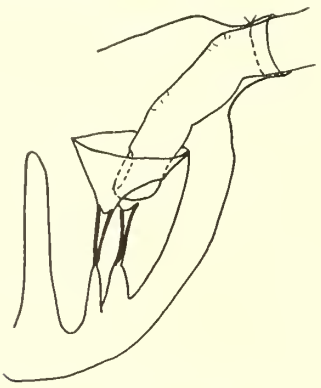


Fig. 4. Finger fracture of stenotic valve.

removal of the posterior cusp (or a large portion of it)[23, 24, 25] by means of a valvulotome inserted through the ventricular wall. After resection has been accomplished, a segment of a large vein, turned intimal side out, is drawn through the ventricular walls and swung hammock-like across the ventricular cavity beneath the mitral orifice. This device is blown against the orifice during systole and inhibits regurgitation through the enlarged mitral opening. An integral part of this operational technic is direct vision of the venous hammock by cardioscopy. In cases of mitral disease with pure mitral insufficiency, valvulotomy has been omitted and a tube of pericardium inserted in similar fashion across the ventricular cavity to act as a flutter valve.[26] These flap valves have remained competent for long periods and careful observation has shown no evidence of deterioration of their function.

Table 1. *Results in Mitral Regurgitation*

Author	Cases	Deaths	Satisfactory Results
Bailey et al[26]	7	0	6
Murray[23, 27]	10	2	8

Other procedures for the correction of mitral stenosis have been suggested and carried out with some success. The old observation that patients with Lutembacher's syndrome (mitral stenosis plus interauricular septal defect) appeared to do better than other patients with mitral stenosis, has suggested the surgical production of interauricular defects.[21, 22] It was hoped that the flow of blood from the left to the right auricle might relieve left auricular and pulmonary engorgement. However, it has been difficult to estimate an optimum size of a new opening. Minute shunts are without effect. An excessively large aperture was observed to shunt an extreme flow of blood into the right auricle with right heart strain and with dangerous curtailment of left ventricular filling.

Another approach for the relief of tension in

Table 2. *Results of Operations for Mitral Stenosis*

Author	Type	Number of Cases	Number of Deaths	Results Excellent or Improved	Results Unimproved	Unclassified
O'Neill et al.[31]	D	214	26	159	29	
David et al.[22]	D	11	2	8	1	
Bland[33]	D	8	2	6		
Longmire[34]	D	25	4			21
Brock[35]	D	50	8	37	5	
Brantigan[36]	D	12	3	7	2	
Blalock[37]	D	30	2	26	2	
Hickey[38]	D	5	0			5
Smiley[39]	D	11	1			10
Smithey[40]	D	7	2	7		
Crafoord et al.[41]	D	7	0	12	2	
Tam[16]	D	19	5			3
O'Farrell et al.[1]	D	5	2			51
Harken et al.[13]	D	71	20			12
Bland[33]	P.A.	15	3	1		
Chapman et al.[42]	P.A.	1	0			
Totals		491-	80	263	41	107

Mortality 16.3 per cent.
% of Total Improved 69.0.
D = Direct attack on the valve, either finger fracture, knife, or valvulotome.
P.A. = Pulmonary azygous shunt.

the left auricle and in the lungs from mitral stenosis has been the anastomosis of the azygous vein to one of the main pulmonary veins.[27, 28, 29] The cardiac ends of the azygous and the dorsal segment branch of the right inferior pulmonary vein were joined permitting blood to flow from the high-pressure left auricular-pulmonary bed into the right auricle. These procedures obviously

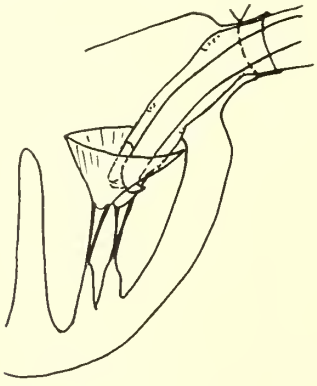


Fig. 5. Commissurotomy with knife attached to the operator's finger.

have not facilitated flow through the stenotic mitral valve, but they have acted to release excessive pulmonary venous pressure to prevent the pulmonary damage and accidents (hemoptysis, pulmonary edema) which so often complicate mitral stenosis.

An indirect surgical approach to mitral stenosis applicable to a few patients has been the excision of the inferior cervical and first four or five thoracic sympathetic ganglia to prevent critical tachycardia.[20, 21, 22] This procedure originated from the observation that increase in the heart rate may increase the output of the competent right ventricle while flow through the constricted mitral valve is further diminished by the shortened period of diastole.

Further exploration of possibilities for the correction of mitral valve disease or amelioration of its physiologic effects has been carried out on dogs. An interesting attempt has been made to establish a bypass from the left auricle to the left ventricle by means of a donor aorta inserted at one end into the left auricular appendage, and at the other end into the left ventricular cavity.[30] This collateral channel remained patent in the experimental animals, but the inclusion of the aortic valve of the donor dog in the bypass failed to prevent regurgitation because of shrinkage and deterioration of the aortic cusps.

The clinical results of these brilliant operative procedures have often been dramatically successful despite the fact that many operations have been performed on critically ill patients, and with technics which will be improved with experience. There have not been sufficient cases reported nor has follow-up been of sufficient length to permit critical evaluation of results of the various procedures. It is evident, however, that the surgical results in the majority of cases, in all series, have been most encouraging.

The subjective improvement has often been remarkable with a return to more normal existence of previously bedridden or chairbound individuals. Many patients with intractable heart failure have been so rehabilitated as to require no cardiac medication to maintain competence. Other patients who were subject to severe bouts of hemoptysis have been sufficiently relieved so that attacks of bleeding became less severe or were completely abolished.

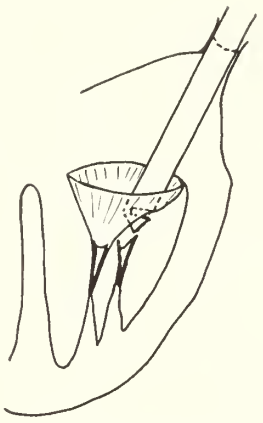


Fig. 6. Valvuloplasty with removal of a wedge of commissural tissue with biting valvulotome.

Objective evidence of improvement following surgery has been observed in the decline of left auricular and pulmonary arterial pressures as the mitral obstruction is relieved. Augmentation of arterial oxygen content and cardiac output, decrease in radiologic signs of pulmonary congestion, and of cardiac enlargement have also indicated improvement.

In view of these results, it is becoming a clinical

Table 3.

Author	Cardiac Output liters per min. per sq. meter body surface		Mean Pulmonary capillary pressure mm. Hg.		Pulmonary pressure mm. Hg.		Pulmonary art. resistance mm. Hg. liters per min. per sq. meter body surface		Left aur. press. mm. Hg.		Rt. aur. press. mm. Hg.		Rt. Vent. press. mm. Hg.	
	Preop.	postop.	Preop.	postop.	Preop.	postop.	Preop.	postop.	Preop.	postop.	Preop.	postop.	Preop.	postop.
Draper[43]	1.92	2.43			66	31	16	3.7						
	2.17	2.32			60	27	11.4	6.6						
	1.49	1.72	32	29	63	41	20.8	6.8						
Keown[44]									35.8	6.9				
									16.5	1.3				
									30.2	22.1				
									16.0	7.5				
									45.5	39.0				
									7.8	6.5				
Bailey[45]									45.1	15.5	17.4	9.9	96.2	48.6
									30.3	2.6	4.55	3.4	19.6	2.7
Baker[14] et al.	2.6	3.3			68	40							68	23
	2.5	3.3			6 3/26	35/10					16	6	55/10	35/0
	2.9	2.7			59	70/30					7	0	36	65/13
	2.1	2.3			7 3/50	41/20					12	12		
Bland[33]									33 (aver. of 8 cases)	27				
Harken[21]					49	32								

responsibility to recognize the patient with chronic rheumatic heart disease who may be benefitted by appropriate surgery. It appears now that surgery is most clearly indicated in patients whose difficulty lies in the mechanical obstruction of the mitral valve rather than in myocardial weakness.

The decision as to which of the operative procedures is most suitable cannot be outlined categorically. The shunting operations are less desirable in general and are not indicated in the presence of severe right heart failure, for the added flow of blood into the right auricle through the azygous anastomosis or the interauricular septum will only aggravate the strain placed upon the right ventricle. Nor should creation of a shunt be advised in the presence of a persistently low cardiac output. For example, if an inadequate volume of blood is being forced through the mitral ring by high left auricular pressure, a dangerously small flow may follow left auricular decompression. Shunting procedures seem most clearly indicated in patients with strong hearts and normal cardiac output but with intense pulmonary congestion, edema or hemorrhage. Cardiac denervation may be efficacious in the occasional individual with intractably rapid heart actions especially if the more direct surgical attempt involves undue risk. The direct attack upon the diseased valve in the carefully selected patient would seem to be the most frequently indicated procedure. Exact indications for surgery are not clearly defined, nor are the contraindications.[14, 17, 47, 48] Certainly the presence of other valvular lesions, especially aortic valve deformities eliminates much or all of the usefulness of a mitral operation. Mitral regurgitation associated with stenosis deprives the patient of significant benefit of commissurotomy or a finger fracture alone. Such patients require the more extensive procedure of insertion of vein or a pericardial graft to restore valvular sufficiency. Cardiac hypertrophy and dilatation indicative of permanent myocardial damage limit the benefit to be derived from surgery. An extreme state of cardiac decompensation which has not been stabilized before surgery likewise invalidates operation. In addition the presence of active rheumatic fever or bacterial endocarditis prohibits surgery because of the likelihood of subsequent valvular damage following surgery as a result of inflammatory disease. On the other hand, experience has shown that neither arrhythmias, particularly auricular fibrilation, nor the history of embolic episodes contraindicate surgery. The relief of mitral stenosis may terminate the one, and careful entry into the auricle with removal of palpable clots may eradicate the source of the other.

Skill and experience are required to judge accurately the patient's suitability for surgery. The use of elaborate diagnostic tools is required in each case. Radiologic and electrocardiographic studies are, of course, necessary. Catheterization of the heart yields information essential in the selection of the patient for surgery. It has been possible by this procedure to determine right auricular and right ventricular and pulmonary arterial pressures, oxygen tensions and cardiac output, to measure indirectly left auricular pressure and to recognize the presence of mitral regurgitation. By application of these data to hydrodynamic formulae it has been possible to estimate the actual size of the mitral opening.[19, 50] * It has been found that if the mitral valve orifice exceeds 2.5 square centimeters there are no deleterious physiologic effects from mitral stenosis. When the orifice is 1.5 to 2.5 square centimeters there is only moderate difficulty; with less than 1.5 square centimeters there are several physiologic deviations due to the mitral lesion. It has been possible to determine the degree of pulmonary congestion, and the presence or right heart strain by accurate hemodynamic data obtained by this procedure. The value of this information in predicting the benefit to be gained and the risk involved in each patient is obvious. The ideal patient with "tight" mitral stenosis, marked pulmonary congestion and a healthy right ventricle can be recognized with certainty preoperatively. The less satisfactory patient with mitral regurgitation or right ventricular failure or other evidence of myocardial disease can be detected and the value of surgery reasonably predicted.

SUMMARY

A review of the surgical treatment of mitral valvular disease is presented. The indications and contraindications for operation are considered and the results are summarized.

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The authors gratefully acknowledge criticisms and suggestions of Drs. John R. Smith and W. B. Wood, Jr.

* $A = \frac{F}{C \sqrt{2gh}}$

A = area of mitral orifice in square centimeters.
F = flow in cubic centimeters per second.
g = gravity acceleration.
h = pressure gradient across the valve.
c = empirically determined constant.

F is determined by Fick method of calculation of cardiac output adjusted to number of seconds of diastole per minute.
h is determined by indirect method of left auricular pressure estimation and the assumption of a normal intraventricular diastolic pressure. h auricular pressure—assumed ventricular pressure (5 mm. Hg.)

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STELLATE GANGLION BLOCK IN THE TREATMENT OF VARIOUS SYNDROMES ENCOUNTERED IN CARDIOVASCULAR DISORDERS

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IT HAS BEEN well established that procaine infiltration of sympathetic ganglia in various regions of the body inhibits the relative strength of the vasoconstrictor fibers of the area supplied and allows for control by the vasodilator fibers.[3]

The stellate ganglion is the largest ganglion of the sympathetic chain and is composed of a fusing of the inferior cervical and first thoracic ganglia.[1] It is about 2 centimeters long and lies anterior to the head of the first rib and the transverse process of the seventh cervical vertebra, near the lateral border of the body of the vertebra. The upper part gives off rami to the three lowest cervical nerves, while the lower is connected to the first thoracic nerve by a large and a small ramus communicans.

The vasomotor effects of infiltration of the stellate ganglion are widespread, with altered hemodynamics involving the homolateral upper extremity, the head, neck and the thoracic viscera, with manifestations chiefly those of decreased vasoconstriction, increased vasodilation, and stimulation of the parasympathetic innervation of the areas mentioned. In general, infiltration of the stellate ganglion is indicated by the presence of reflex vascular spasm in the innervated areas, either evident or suspected.

In addition to promoting vasodilation in the innervated areas, blocking of the stellate ganglion seems to produce a depressant effect on the cardioaccelerator fibers[1] and fibers that increase bronchial muscular tone and spasm,[14] when these organs are in an excited state.

Successful infiltration of the stellate ganglion is recognized by the development of the "Horner syndrome," consisting of a constriction of the homolateral pupil, swelling and ptosis of the upper eyelid, slight elevation of the lower lid, mild enophthalmos and narrowing of the palpebral fissure, associated with definite injection of the sclera due to vasodilation. There is a slight dilation of the contralateral pupil. In addition, there is increased skin temperature and anhydrosis perceptible of the upper extremity, chest wall, and face on the side injected; frequently the patient will notice nasal congestion on the same side as well.[4]

Perhaps one of the reasons this procedure has not had a more widespread popularity lies in previous technical difficulties in injection of the ganglion, and the number of more or less catastrophic complications attendant to the older approaches employed.

The first approach reported for the injection

Presented at the 94th Annual Session of the Missouri State Medical Association, March 30-April 2, 1952, St. Louis.

was a posterior one in which the needle was passed between the transverse processes of the sixth and seventh cervical vertebrae, and the depth of penetration was governed by estimation.[1] Injections by this route often deposited the procaine (alcohol was first used, but infrequently of late)[14] in either the circulating blood or the spinal fluid, and more often involved the sixth cervical nerve root.

In 1944, a lateral approach was suggested,[4] with the needle passed just anterior to and parallel to the transverse process of the seventh vertebra. This was a distinct improvement, but the additional complication of pneumothorax was introduced from piercing of the cupola of the lung.

Still later, a more anterior approach was described.[5] The puncture site was at the lateral border of the scalenus anticus muscle at the level of the cricoid cartilage, and an angle of from 10 to 15 degrees toward the posterior was followed. This was attended by fewer cases of pneumothorax, but occasionally was attended by infiltration of the seventh and eighth cervical and first thoracic nerve roots and, in one case, the needle entered the intervertebral foramen.

In 1945, an indirect approach was proposed,[6] injecting in the region of the middle thoracic sympathetic ganglion and relying on diffusion of the procaine through the prevertebral areolar tissue for involvement of the stellate ganglion. Excellent results were obtained, although the same complications as with the other approaches were encountered.

A still more anterior approach was proposed in 1950,[9] with the puncture site between the two heads of the sternomastoid muscle, with the needle passing medially and posteriorly at a 45 degree angle. The same complications were encountered, except that introduction of the needle into the intervertebral foramen was eliminated.

All of these approaches to the ganglion have a common, inherent defect, in that the location of the tip of the needle must be inferred from the puncture site and the direction of penetration of the needle.

In 1950, the direct anterior approach, or "tissue displacement method," was described[11, 14] which eliminated most of the complications formerly attending the procedure and brought the ganglion into a subcutaneous position for injection. This method, which has been employed in all of our cases, is simple, relatively safe and does not require hospitalization for accomplishment.

TECHNIC

The patient is placed in the supine or semirecumbent position with the face directed straight forward. The chin may be slightly elevated, but not by voluntary muscular effort on the part of the patient and not sufficiently to put the structures of the neck under tension. The index and middle fingers of the left hand are spread about 1 centimeter apart and are placed along the medial border of the sternomastoid muscle with the lower finger just above and against the sternoclavicular articulation. The finger tips are pressed slowly, but firmly, posteriorly into the neck. The carotid pulsation is felt on the volar surface of the fingers as the neurovascular carotid bundle is displaced laterally. The trachea, esophagus and thyroid gland lie against the dorsal surface of the fingers and are displaced slightly medially. The dome of the lung, occasionally rising into the neck, is thus displaced downward, and the transverse processes and the side of the bodies of the lower cervical vertebrae are felt by the finger tips.

All important structures are displaced in this way and the stellate ganglion, in its position against the underlying bony surface of the body and base of the transverse process of the seventh cervical vertebra, is brought into a subcutaneous position between the examining fingers where it can be infiltrated safely and easily.

For the injection, one should use from 5 to 10 cc. of 1 per cent procaine solution without adrenalin. A 1½ or 2 inch needle, about 22 guage, is used. It is inserted perpendicularly into the region of the ganglion, encountering the solid bony base of the transverse process. The examining hand is then removed, allowing the structures to fall back into position as the depressed skin slides along the needle shaft. Negative pressure is then applied to the plunger of the syringe to test for blood or spinal fluid and, if neither is encountered, the procaine is introduced slowly.

Success of the block is indicated by the development, within a few minutes, of a Horner syndrome, reaching its maximum intensity in from ten to twenty minutes.

Although the skin is customarily prepared with Merthiolate and sterile gloves are used, the procedure is amply safe and simple for use in the office or clinic. The procedure has been used in the home on two occasions, with only ordinary medical alcohol for skin and hand sterilization, without complications or sequelae. Certain precautions, however, are advisable.

Although infrequent, procaine sensitivity is encountered on occasions or, perhaps, in spite of precautionary measures, some of the procaine finds its way into the circulating blood. The ensuing collapse is best treated by the administration of Pentothal sodium, a supply of which should always be immediately available.

Although it is practically impossible to enter an intervertebral foramen by this approach, procaine could possibly enter the spinal fluid by way of the dural extension along one of the roots of the spinal nerves. Should this occur, artificial respiration should be given, employing a B-L-B face mask and bag, with oxygen. If, however, due caution is observed, this complication should not occur.

Stellate ganglion block seems to be indicated in almost any condition of the head, neck, upper extremity or chest that is attended by sympatheti-

cotonia, with resultant vascular spasm, or spasm of the smooth muscle of the thoracic viscera.

In the last eighteen months, I have performed more than two hundred stellate blocks. These are not summarized here as such, since many of them have been given to out-patients whom it was impossible to follow. In addition, numerous blocks were given as a diagnostic aid rather than as therapy *per se*. It has also been difficult to collect the case records of the various cases treated, as many of them were done in the role of consultant in the hospital, and the procedure has not been adequately cross-indexed.

Out of this number of blocks, no serious complications have ensued. The minor complications encountered are summarized in table 1.

When venous blood entered the syringe as the plunger was withdrawn, the needle was withdrawn from the neck and pressure was applied to the area. In each of these cases, repeated attempt at the block was successful in from twenty to thirty minutes later.

The one case of paralysis of the recurrent laryngeal nerve that was encountered was obviously due to widespread diffusion of the procaine. This complication disappeared forty-five minutes after the injection.

The case in which the sixth cervical nerve root was injected had transient paresthesias and mild weakness of the arm for not more than two hours, and no further residual.

Table 1. *Complications*

Complication	Number of Cases
Venous blood entering syringe	7
Paralysis of recurrent laryngeal nerve	1
Injection of sixth cervical nerve root	1

CLINICAL APPLICATION

Cerebrovascular accidents.—Stellate block has been found beneficial in cerebral vascular occlusions (thrombosis and embolus),[3, 7, 9, 11, 12, 14] but is either of no benefit, or perhaps detrimental, in cerebral hemorrhage.[7, 9, 11, 14]

The beneficial mechanism is the relief of reflex vascular spasm. Although it has been demonstrated[10] that in chronic cerebrovascular disease the block does not influence cerebral metabolic function, oxygen or glucose utilization, in the acute episodes of thrombosis and embolism, the block was observed, through trephine openings, to produce both a marked vasodilation and improved cerebral tissue viability.[9] Electro-encephalographic tracings[9, 11] usually, but not invariably, show changes corresponding to the clinical improvement.

Naffziger and Adams[9] report the results following stellate block therapy in cerebrovascular occlusive accidents shown in table 2.

In my experience, the procedure is of particular benefit when it is performed early in the course of the episode. In these episodes, the most notable change is clearing of the sensorium, with increased alertness, improvement in speech and, less frequently, immediate improvement in motor function.[12] However, the major significant difference is a lowered mortality rate in those patients having stellate blocks.

The use of sympathetic ganglion block for the relief of far advanced trophic changes due to long standing hemiplegia has been advocated,[7] but the results are slight and, in many cases, questionable.

Table 2. *Results*

Type of Occlusive Syndrome	Results Percentage		
	Good	Fair	Poor
Cerebrovascular thrombosis	56	26	18
Cerebral embolism	53	25	22
Episodic cerebrovascular spasm	100		

CASE REPORT

Miss C. R., a 47 year old white female, was first seen in January 1951, suffering from paroxysmal attacks of auricular fibrillation secondary to rheumatic heart disease with mitral valvular damage. In spite of therapy, six weeks later her fibrillation became persistent, and it became necessary to control the ventricular rate with digitalis. She was able to continue her work without discomfort. On July 19, 1951, she was admitted to the hospital some thirty minutes following the abrupt onset of a complete, flaccid, right hemiplegia, with associated aphasia, marked confusion and inability to protrude the tongue. A diagnosis of cerebral embolism was made and a left stellate block was performed forty-five minutes after admission to the hospital. The Horner syndrome became evident within thirty to sixty seconds and, within an additional sixty seconds, she was able to move her previously flaccid arm and leg. One hour later, careful neurologic examination failed to reveal evidence of neuropathy and the patient was subjectively normal, although she had complete amnesia for the period of severe confusion preceding the stellate block. She was started on anticoagulants immediately, but the next afternoon, arterial embolization of the right brachial artery occurred. A right stellate block was performed and within twenty minutes color had returned to the hand, and two days later the radial pulse became palpable. She had further uneventful recovery. As of this date, she is on continued dicumarol therapy, but is able to continue her work without discomfort.

Shoulder Hand Syndrome.—It has been my experience to have encountered quite a few cases of shoulder hand syndrome, some of which were of visceral origin, others apparently secondary to hypertrophic osteoarthritis of the cervical vertebrae, and others apparently of a primary nature. In these conditions, the use of stellate block has been of two-fold purpose: (1) the relief of arterial spasm and pain, and (2) diagnostic test value.

It is my observation that the relief of pain, when due to arterial spasm, has usually been prompt and satisfactory. This is especially true when the

primary disease was of visceral origin, but yet satisfactory in over half of the cases secondary to cervical osteo-arthritis.

Since the procedure has been used frequently in the office, I have been using it as a diagnostic test to segregate reflex causalgia from organic pathology of the neck, shoulder or arm. I have found the test quite helpful and in those cases in which block fails to relieve pain and spasm, orthopedic investigation has usually found intrinsic skeletal disease in the affected extremity.

Table 3. *Myocardial Infarction*

Case	Age	Sex	Type of Infarct	Unilateral or Bilateral Block	Result
W. S.	44	M	Anterior	Unilateral	Excellent
L. S.	62	M	Anterolateral	Bilateral	Excellent
F. W.	66	F	Posterolateral	Bilateral	Excellent
J.L.A.	71	M	Posterior	Bilateral	Excellent
W. J.	69	M	Posterior	Bilateral	Excellent
L. T.	59	M	Posterior	Bilateral	Excellent
L. B.	49	M	Anterior	Bilateral	Excellent
E. H.	66	F	Posterior	Bilateral	Fair
E. C.	49	M	Anterior	Bilateral	Poor
R. G.	55	M	Posterolateral	Bilateral	Excellent
L. G.	51	F	Anterolateral	Bilateral	Excellent
S. R.	51	M	Posterior	Bilateral	Fair
S. P.	65	M	Posterior	Bilateral	Fair
G. S.	71	M	Posterior	Bilateral	Excellent
E. C.	68	M	Posterior	Bilateral	Poor
G. H.	64	M	Anterior	Bilateral	Excellent

Total number of coronary occlusion	16
No relief of pain (poor result)	2
Mild to moderate relief (fair result)	3
Complete relief of pain (excellent result)	11

Myocardial Infarction.—Little mention is made in contemporary medical literature of the use of stellate block in the treatment of acute myocardial infarction, but it has been my experience that it is a valuable adjunct to therapy, chiefly for the relief of pain. I also believe that the use of stellate block, does, in some measure, minimize the size of the infarcted area by relieving the reflex coronary artery spasm and increasing collateral blood supply to the periphery of the infarcted area. When effective, the relief of pain is prompt, the circumoral pallor and hyperhydrosis is relieved and the incidence of ectopic rhythms seems to be diminished; a sense of well-being replaces the normal apprehension usually encountered.

CASE REPORT

Mr. W. S., a 46 year old white male, was admitted to the hospital with electrocardiographically proven anterior myocardial infarction. Prior to his hospitalization, he had been given 30 mg. of morphine intravenously, and, since pain was not relieved and shock continued, a second dose of 15 mg. was given subcutaneously an hour later. Two hours later, neither pain nor shock had abated and bilateral stellate block was advised. The right ganglion was blocked, but before the second was attempted, the pain had disappeared, the blood pressure had risen 30 points, and the patient enjoyed a sense of well-being. He eventually left the hospital after an uneventful course.

Angina Pectoris.—The use of buffered ammonium sulfate (Dolamin) for injection of the stellate ganglia, usually bilaterally, for the relief of anginal syndrome, was reported by Stubbs and Woolsey in 1950[8] with rather excellent results. Pereirax,[6] in 1945, had previously relieved angina by procaine injections, and had also shown that failures occasionally were due to splanchnic origin of the anginal pain and recommended that the splanchnic nerves also be injected when relief by stellate block alone was not obtained.

My experience in this field has not been great but, of six cases treated, five have obtained definite relief, but return at various intervals, ranging from one to four months, for reinforcement therapy. The sixth case was totally unrelieved.

Pulmonary Embolus.—Stellate block in acute pulmonary embolization has been recommended.[14] Widespread reflex pulmonary vascular and bronchial spasm may cause death from a relatively small embolus; this reflex is interrupted or decreased by immediate procaine stellate block, usually bilaterally.

I have had only one experience in this condition. The patient was a 77 year old white female who suffered a broken pelvis and three broken ribs in an automobile accident. On the fifth hospital day, she suffered an acute pulmonary infarction on the left side. A bilateral stellate block was performed, with almost complete relief of dyspnoea, cough and shock within twenty minutes.

Bronchial Asthma.—The use of stellate block in the acute, severe, asthmatic crisis has been favorably recommended,[14] usually requiring bilateral injections.

Four cases have been treated, one of whom obtained rather dramatic, prompt relief that persisted for forty-eight hours. A second case had definite, but only moderate, relief, but the other two had no response at all. This is, of course, too few cases on which to base any assumptions, but the procedure does warrant further clinical trial in this condition.

One case of chronic bronchial asthma, without acute crises, had definite improvement and was able to carry on her activities without further medication. She requires reinforcement injections about every three months.

Chronic Cor Pulmonale.—Two cases of pulmonary fibrosis were treated with blocks. One had rather definite, but only temporary, relief of dyspnoea and cough, but the other obtained no relief whatsoever. One case of far advanced bronchiogenic carcinoma was treated without benefit.

A review of the literature, plus my experience, suggests that the following conditions are frequently relieved by stellate ganglion block, unilaterally or bilaterally as necessary:

1. Cerebral thrombosis.
2. Cerebral embolus.
3. Post-traumatic cerebral angiospasm.
4. Episodic cerebral vascular spasm, secondary to hypertensive encephalopathy.
5. Angina pectoris.

6. Myocardial infarction.
7. Postcoronary shoulder-hand syndrome.
8. Reflex causalgia of the upper extremity.
9. Painful swelling of the arm following radical mastectomy.
10. Early herpes zoster.
11. Painful dissecting aneurysms of upper aorta.
12. Raynaud's disease.
13. Severe hyperhydrosis of the hands.
14. Atrophic rhinitis.
15. Sclerodactylia.
16. Pulmonary embolism.
17. Asthmatic crises.
18. Paroxysmal auricular or nodal tachycardia.

SUMMARY AND CONCLUSIONS

A brief history, description of technic, attendant complications and a summary of the clinical results obtained by the use of stellate ganglion block has been presented.

With the presented technic, and the resultant infrequent, usually mild, complications encountered, it is felt that this is a simple, safe clinical procedure with widespread application and should be a welcome addition to the armamentarium of the general practitioner.

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THE AVOIDANCE OF RECURRENT HYPERTHYROIDISM

A 20 YEAR STUDY

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PRIOR TO 1933, I habitually performed bilateral, partial thyroidectomy for toxic goiter, smooth or nodular, with or without exophthalmos. This was the standard operative procedure of that era and was improperly described as "subtotal" thyroidectomy. It was not, in fact, subtotal; portions of each lobe varying from one eighth to one third were left, the amount depending upon the severity of the hyperthyroidism, the size of the lobe, the age of the patient and the presence or absence of gross nodules.[1] Avowedly, all surgeons with a concentrated experience in surgery of toxic goiter were then attempting to achieve two objectives in the operating room: one planned to remove a sufficient portion of the goiter to effect cure of the hyperthyroidism, yet proposed to leave enough of the goiter to prevent the appearance of postoperative hypothyroidism. Although I came to believe in 1932 that those two objectives are mutually exclusive, yet it must be admitted that such a partial thyroidectomy gave fairly satisfactory results. On the other hand, there was a sufficiently large, though unpublicized, percentage of persistent or recurrent hyperthyroidism that many thoughtful physicians refused to use the term, cure, with any assurance as the regular and permanent result to be anticipated from such an operation.

Statistical studies of recurrent and persistent hyperthyroidism following operation are not satisfying if large numbers of cases, a period of at least ten years and physical examination of the patient are assumed to be prerequisites of reliability A hasty survey of my own recurrences in the course of a detailed mortality study[2] for the years 1926-1935 convinced me that the rate of failure to relieve hyperthyroidism completely by partial thyroidectomy during that period in which 1,100 operations were done might lie between 5 to 10 per cent for the years before 1933. That other physicians have had similar disquieting impressions of what I frankly condemn as an inadequate operative procedure is shown in (1) the continued distrust by some practitioners of any operative procedure as truly curative, (2) by the noticeable and unfortunate trend toward the performance of total thyroidectomy and (3) the misuse of the thiourea derivatives in the vain hope that they will provide definitive treatment (i. e., cure) of hyperthyroidism rather than in their proper role of inducing remission of hyper-

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Presented at the 94th Annual Session of the Missouri State Medical Association, March 30-April 2, 1952, St. Louis.

thyroidism in preparation for surgery. Radioactive iodine, the much exploited "atomic cocktail," is presented to the public as an acceptable alternative to thyroidectomy without a frank admission that it is usually ineffective in nodular goiter, almost useless in carcinoma of the thyroid, is slow in action and is, above all, still an experimental procedure whose tendency to cause cancer of the thyroid gland cannot be evaluated with certainty for, perhaps, five more years.

Table 1. *Summary of Persistent and Recurrent Cases of Hyperthyroidism*

Total number of cases		34
Prior operation elsewhere	15	
Prior operation by us	19	
Primary operations performed by us (19 cases)		
Diffuse hyperplasia of the thyroid		15
2 stage resection in 1929-1937	9	
1 stage bilat. resection in 1925-1936	6	
5, conservative op., 1925-1931		
1, in 1936		
Toxic nodular goiter		4
"unilateral" adenoma; lobectomy only (1946, 1933)	2	
1 persistent		
1 recurrent in other lobe 17 yrs. later (Ca)		
multinodular	2	
1 intrathoracic; separate component overlooked (1938)		
1 failure to excise pyramidal lobe (1947)		
Results of secondary operations (28 cases)		
1 death on first postoperative day, due to cardiac arrest, not crisis.		
1 recurrence of hyperthyroidism after 10 years; operation repeated.		
2 patients in normal metabolic status when last seen.		
24 patients promptly became hypothyroid and have remained so; they are maintained in normal metabolic status by oral administration of thyroid substance.		

My own dissatisfaction with the results of partial thyroidectomy up to 1933 led me to abandon it in favor of a radical, truly subtotal thyroidectomy in which 1 gram or less of goitrous tissue is left in each lobe. I did so in the belief that, if certain and permanent relief of hyperthyroidism was to be achieved, the surgeon's attention would have to be focused not on what percentage of tissue was to be removed but upon how small an amount of toxic goiter was to be left. That amount, as defined, is about the smallest quantity that can be left in the tracheoesophageal groove and as a lining for a generous portion of lateral capsule. The validity of my thesis, therefore, that persistent or recurrent hyperthyroidism is due solely to a fault in the technical procedure, to leaving too much toxic goiter (or thyroid tissue capable of giving rise to hyperthyroidism) in the neck, should be demonstrable by a survey of the less than ideal results of radical, subtotal thyroidectomy, as defined, since its adoption.

As set forth in an early publication,[3] one must not regard thyroidectomy for toxic goiter as an episode encompassing cure and dismissal as in appendectomy. Postoperatively, the euthyroid state must be maintained by daily thyroid feeding, the need for which has proved to be, in my experience, life long save in exceptional cases. The justification in freedom from recurrence and the need for such a regimen must be made thoroughly clear to the patient before discharge from the hospital. Observation at appropriate intervals is just as essential as for the individual with spontaneous hypothyroidism and should be no more frequent or expensive. The latter metabolic derangement is far more common than is toxic goiter, incidentally, hence the post-thyroidectomy patient is "in good company." In passing, I would urge the most watchful attitude in the care of those patients who have had exophthalmos, or lid edema without proptosis, prior to operation. On the basis of serial observations with the exophthalmometer in nearly all patients since 1937, it seems clear that the greatest safeguard against a postoperative increase in proptosis and the development of orbital edema is the maintenance of proper dosage of thyroid substance to meet the individual's need. No patient since 1930 has required orbital decompression.

Failures to cure hyperthyroidism at primary thyroidectomy have occurred in the nearly twenty years of experience as reported herewith, but study of the data is convincing that in each instance there has been an error in estimating the pathologic situation (in the adenomatous goiters) or in carrying out intended procedure (in the two stage thyroidectomy as done prior to 1938). This case history study has been made on the records of all private patients known to me to have developed persistent or recurrent hyperthyroidism since 1932 as well as those records dating from earlier years which are in my possession. The operations described in the tables as having been done "here" were performed by me or by the late Willard Bartlett.

Table 2. *Persistent Hyperthyroidism*

Prior operation here (9 patients)			Secondary operation	Result
17A	d.h.	2 stage, '29	L. Lobe, '36	H. '51
20A	d.h.	1 stage, '30	Bilat., '51	H.
21	d.h.	1 stage, '30	Bilat., '37	H. '51
24	d.h.	2 stage, '30	Refused, '35	?
26	d.h.	2 stage, '30	Bilat., '41	H. '45
43	d.h.	2 stage, '34	Bilat., '37	H. '42
269	d.n.	1 stage, '38	Intrathoracic, '40	H. '43
655	u.ad.	L. lobe, '46	Refused, '46	?
722	d.n.	1 stage, '47	Pyramidal, '49	H. '51
Prior operation elsewhere (6 patients)				
113	d.h.	1 stage, '33	2 stage, '37	Rec. '47+
376	d.h.	1 stage, '29	R. lobe, '39	Death
615	d.h.	1 stage, '40	Bilat., '42	H. '45
1084	d.h.	1 stage, '45	Preop. Rx, '51	
765	d.n.	L. lobe, '45	R. lobe, '47	H. 4 mo.
1062	d.n.	L. lobe, '30	R. lobe, '51	Normal

d.h.—diffuse hyperplasia.
H.—hypothyroid, treated.
d.n.—diffuse nodular.
u.ad.—unilateral adenoma.
+ bilateral recurrence; thyrotoxic; operated on again in 1948.

COMMENT

A detailed discussion of the tabulated cases has already been presented[4] and will not be repeated

here. Certain elaboration of the data should be made.

1. It is immediately apparent that nine of fifteen instances of failure to cure diffuse hyperplastic goiter (Graves' disease) at the primary operation occurred in patients operated upon by a two stage procedure (there being an interval between lobectomies) prior to 1938. The technical fault lay in the practice of opening the deep layers of the neck on the side of lobectomy, rather than in the midline, in order to avoid the site of future or previous operation, as the case might be. This led occasionally to incomplete visualization of the isthmus and the tissues immediately adjacent to the trachea and in the patients cited these were the locations of the tissue found at secondary operation. Following recognition of this factor in 1937 and its correction, no failures have been encountered following two stage thyroidectomy although the procedure was used in poor risk patients until the thiourea compounds became clinically available in 1942 and the two stage operation became almost obsolete.

2. The remaining six patients with diffuse hyperplastic goiter (table 2, cases 20 A, 21; table 3, cases 4, 23, 30, 91) were operated on by the conservative, bilateral operation employed prior to 1933, with the exception of case 91, first operated upon in 1936. This is the only patient with toxic, diffuse hyperplastic goiter known to have had a failure of cure of hyperthyroidism following radical, subtotal thyroidectomy as performed in one stage since 1932.

3. The four known failures of cure after primary operations for toxic nodular goiter represent improper assay of the situation. Surgeons have not sufficiently recognized the multifocal nature of the true adenoma of the thyroid gland and I am convinced that single lobectomy for an apparently unilateral adenoma is an inadequate procedure and I have regularly done radical, subtotal thyroidectomy for such lesions since 1946. Failure to

Table 3. *Recurrent Hyperthyroidism: Interval Events*

No. of cases	Period of recognition of toxicity
2	2 years or less
3	2 to 5 years
3	5 to 10 years
11	10 years or longer
19 Total	

16 patients did not become hypothyroid
3 patients became hypothyroid

do so in 1933 in case 35 (table 4) resulted in the appearance of a toxic adenoma in the remaining lobe in 1950 and in it was found a cystadenocarcinoma, the patient then being 76 years old. On the other hand, persistent hyperthyroidism followed the removal of a huge adenoma of the left lobe in case 655 (table 2) which had caused inferior laryngeal nerve paralysis; a small adenoma was also excised from the right lobe but it must have been the site of hyperplasia as well, though little enlarged.

In two patients with bilateral, multinodular goiter, I failed to identify in one (case 269, table 2) an intrathoracic component that had completely lost its attachment to the lower poles of the obviously diseased lobes and in a second

Table 4. *Recurrent Hyperthyroidism*

Prior operation here (10 patients)			Secondary operation	Result
4	d.h.	1 stage, '25	Bilat., '38	H. '51
23	d.h.	1 stage, '30	Bilat., '34	H. '51
25	d.h.	2 stage, '30	Bilat., '35	H. '51
30	d.h.	1 stage, '31	Bilat., '39	H. '47
51	d.h.	2 stage, '35	Bilat., '44	H. '50
35	u.ad.	R. lobe, '33	L. lobe, '50	H. '51
91*	d.h.	1 stage, '36	Bilat., '50	H. '51
93	d.h.	2 stage, '36	L. lobe, '48	H. '49
113*	d.h.	2 stage, '37	Bilat., '48	H. '49
160*	d.h.	2 stage, '37	Bilat., '47	H. '51
Prior operation elsewhere (9 patients)				
94	u.ad.	R. lobe, '23	L. lobe, '36	Normal, '38
159	d.h.	1 stage, '27	Bilat., '37	H. '51
242	d.h.	1 stage, '23	Refused op., '38	?
284	d.h.	1 stage, '21	Refused op., '38	Sl. Toxic, '51
348	d.h.	1 stage, '27	Refused op., '39	?
577	d.h.	1 stage, '25	Not. rec., '41	Controlled, '46#
623	d.h.	1 stage, '41	Bilat., '44	H. '50
757	d.n.	L. lobe, '20	Bilat., '47	H. '48
812	d.h.	1 stage, '36	Bilat., '48	H. '51

d.h.—diffuse hyperplasia.
H.—hypothyroid, treated.
u.ad.—unilateral adenoma.
* Taking thyroid substance from time of operation to recurrence.
Died at 78 after stroke.
d.n.—diffuse nodular.

patient (case 722, table 2) failed to demonstrate and excise the pyramidal lobe. Routine x-ray of the chest had, unfortunately, not been made in the first patient.

4. It was often possible to evaluate the factors that had contributed to failure to achieve an ideal result in those fifteen patients whose primary operation had been done elsewhere. In no case had the surgeon been known to have a considerable experience in the surgery of goiter and it is fair to state that my own error of doing a hemithyroidectomy for a supposedly unilateral adenoma had been made by others in four instances. Planning for an inadequate operation, however, was more clearly revealed by the finding of intact superior thyroid vessels and overconcentration on the percentage of the goiter removed, rather than on the quantity left, as revealed occasionally by review of the previous operative notes.

5. If further evidence is needed that a radical, subtotal thyroidectomy will cure hyperthyroidism with the utmost regularity it is revealed in the results of the twenty-eight secondary operations performed on these patients (table 1) regardless of where the primary operation was done. The duration and high percentage of postoperative follow-up is noteworthy. One patient (case 113, table 2 and table 4) had an interval of excellent

health for ten years following secondary thyroidectomy for persistent exophthalmic goiter performed in 1937 as a two stage procedure; she had failed to take her prescribed dosage of thyroid for two years prior to the development of bilateral recurrence and she has required thyroid feeding since her tertiary operation in 1948.

There was one death on the first postoperative day (case 376, table 2) in 1939 after the first stage of a planned two stage resection, sudden cardiac arrest occuring in the elderly subject during a smooth recovery. There has been only one death following thyroidectomy since that episode, irreversible shock having occurred in one elderly hypertensive patient in 1947 due to the sudden occlusion of the left main stem bronchus and massive atelectasis by an intratracheal tube permitted to remain *in situ*, against the surgeon's better judgment, following removal of a huge adenomatous goiter.

CONCLUSIONS

The following views are justified by the study of the case histories of the thirty-four patients with persistent or recurring hyperthyroidism of whom I have a record:

1. There is only one cause of postoperative hyperthyroidism, early or remote. Regardless of how much tissue has been removed, too much goitrous, or potentially goitrous, tissue has been left.

2. Operations designed to avoid the occurrence of postoperative hypothyroidism invite an unduly high rate of unsatisfactory results and are obsolete in conception.

3. Radical, subtotal thyroidectomy as practiced by the writer since 1933 will, if actually carried out, give virtually complete and permanent cure of hyperthyroidism.

4. It is not necessary to perform total thyroidectomy to achieve these ideal results.

5. As defined, thyroidectomy performed as soon as the euthyroid state can be induced is the definitive treatment of choice for toxic goiter, whatever its type, in the overwhelming majority of patients, particularly in the exophthalmic individual.

6. Hypothyroidism should not be regarded as a complication of thyroidectomy except when it is permitted to appear or to persist because of neglect by the patient or physician.

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CASSETTE SERIOGRAPH, 14 BY 17 INCH, FOR AORTOGRAPHY, NEPHROGRAPHY AND ADULT CHEST ANGIOCARDIOGRAPHY

A PRELIMINARY REPORT

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The use of mechanical devices to record a number of roentgenograms in sequence is not a recent adaptation to the diagnostic armamentarium of the roentgenologist. It was no more than one and one half years after Roentgen announced his amazing discovery to the world that instruments of this nature began to appear in the experimental laboratories.

The numerous articles in the literature concerning this subject represent a complete and interesting developmental history.

Although at first the need for this apparatus was chiefly concerned with gastrointestinal examinations, the introduction of a relatively safe opaque medium for intravenous injection promptly stimulated the development of more elaborate devices for vascular study.

It can be well imagined that the earlier results with the study in the progress of a bolus of opaque material through the various portions of the blood stream and the organs they supply captured the interest and attention of investigators all over the world. The simultaneous improvements in the manufacture of x-ray equipment involving more elaborate timing of exposures and the advent of the rotating anode tube cleared the way for developments which resulted in angiography assuming a stable position among other diagnostic procedures.

One of the most outstanding stimulants resulting in today's unparalleled interest in seriography stems directly from the noteworthy contributions in cardiovascular, genitourinary and brain surgery of the last decade. Lesions hitherto considered inoperable bow to the specialized technics which have long since outgrown their "experimental" berth. Many of the new surgical developments issue a diagnostic challenge. Seriography is but a portion of the answer to this challenge, yet it is of invaluable assistance when indicated.

To date seriography has been accomplished primarily with 9 by 9 inch, 9 by 11 inch and 11 by 11 inch roll film devices or 10 by 12 inch cassette changers. These film sizes, especially the latter, have proved adequate for recording cerebral angiography and angiocardiography in young individuals. The film sizes mentioned, however, are not adequate for serial aortography or adult angiocardiography.

The urologist has for some time expressed a

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Aided in part by USPHS Grant CS-9172.

desire for a method of seriography utilizing 14 by 17 film. A rapid series of films in sequence during injection of the abdominal aorta has several advantages, among them, allowing a more complete study of the progressive filling of renal arteries. Another significant feature is that the specific timing of a single exposure which has presented a unique problem in the past, is no longer necessary as roentgenograms can be made continuously during injection.

THE SERIOGRAPHIC APPARATUS

The 14 by 17 rapid cassette changer is but an outgrowth of a gravity feed, leaded tunnel pilot model for 10 by 12 inch cassettes which was developed and used by this hospital in January 1950. The basic principle involved is not original and has been used in nonmedical devices for years. Its adaptation and modification has been thoroughly investigated, but most of the features employed follow considerable trial and error excursions.

The principle involved employs a loading chamber in which cassettes are placed one on top of the other exposure side up. At the bottom of the mazagine there is a sliding panel. Its range of motion is the length of the loading magazine. When the panel is activated in the push or thrust direction, the bottom cassette is forced forward into the tunnel. This procedure places the cassette under the exposure port on which is a Lysholm grid.

The pull or return stroke of the panel allows

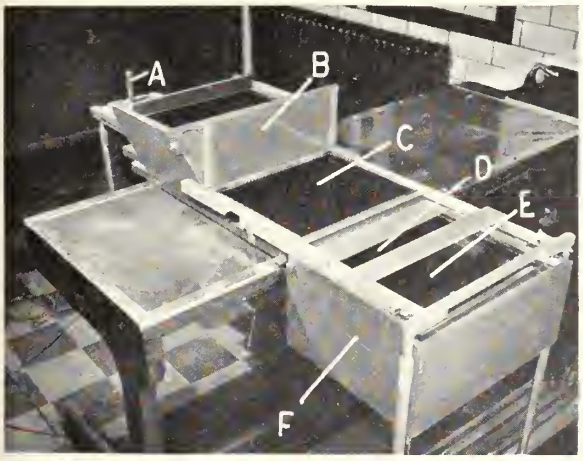


Fig. 1 Cassette Changer with Covers Removed from Loading Magazine and Tunnel. A. Handle for draw panel to force cassettes into tunnel. B. Front side of loading magazine (lead protected). C. Cassettes in exposure area. D and E. Cassette under "drop" port. "Drop" panel almost completely displaced. F. Collecting box.

the stack of cassettes to drop about 3/8 of an inch which positions the bottom cassette in the stack for delivery. At the same time, microswitches under the panel automatically make the x-ray exposure.

The next push stroke forces a second cassette into the tunnel which displaces the exposed cassette under a lead protected area in the tunnel.

Finally, the next pull stroke repeats the functions mentioned but, in addition, it allows the exposed cassette to drop into the collecting box



Fig. 2. Aortogram in progress.

beneath this area. This is accomplished by a sliding trap door which serves as the floor of the lead protected area. The trap door is connected to the thrust panel by a rod and therefore both panels move in the same direction at the same time.

The number of cycles per unit of time depends upon the agility of the operator. Approximately two exposures per second have been accomplished with this apparatus.

The device is clamped to the x-ray table. Its longitudinal axis is at right angles to the long axis of the table.

An extension cord from the microswitches is connected in parallel to the hand switch on the control panel. A thin aluminum cover is placed over the exposure surface of each cassette so that each cassette has a smooth bearing surface for the one above it.

In order that the patient be radiographed on the long axis of the table the cassettes are forced through the apparatus sideways rather than end for end as in the 10 by 12 cassette changer used in this institution.

The collecting box contains a wooden platform which rests on a specially designed spring at each of its four corners. As a result, the cassette leaving the "drop" port falls a distance of about 2 inches to the platform. The supporting springs deflect sufficiently with the weight of each additional cassette to maintain a fairly constant "drop" distance.

The collecting box is supported by a telescopic rod for adjustment to the varying heights of different x-ray tables. The rubber wheel base has two advantages: (1) the collecting box, loaded with exposed cassettes, can be wheeled directly

into the dark room when the run is finished, (2) it can act as a carrying device for the apparatus if it does not have its own wheel support.

Protective lead should be sandwiched in the loading magazine cover and front end. Lead is also needed over the "drop" port, but in my experience the collecting box needs no protective covering on its sides.

The apparatus has been used for adult chest angiography, aortography and nephrography with equal success. The few examinations accomplished indicate that good aortograms can be obtained consistently and that the several roentgenograms obtained permit a selection to the best diagnostic advantage. In nephrography progressive filling of the kidneys can be studied as well as the relative rate of progressive increase in density of one kidney as compared to the other.

The larger film size permits visualization of the entire adult chest which has obvious advantages.

1402 S. Grand Blvd.

The author is indebted to Mr. Frank Tricamo of the South Campus Machine Shop, School of Medicine, for his assistance in the fabrication of this apparatus.

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BOOK REVIEW

Postgraduate Gastroenterology, as presented in a course given under the sponsorship of the American College of Physicians in Philadelphia December MCMXLVIII. Edited by Henry L. Bockus, M.D., Professor of Gastroenterology, University of Pennsylvania Graduate School of Medicine. W. B. Saunders Company. Philadelphia and London. 1950. Price $10.00.

There are more than fifty contributors to this volume. The articles are the edited versions of the recordings of the discussions presented in the course in gastroenterology sponsored by the American College of Physicians in the week December 6 to 11, 1948. The whole is edited by Henry L. Bockus, M.D.

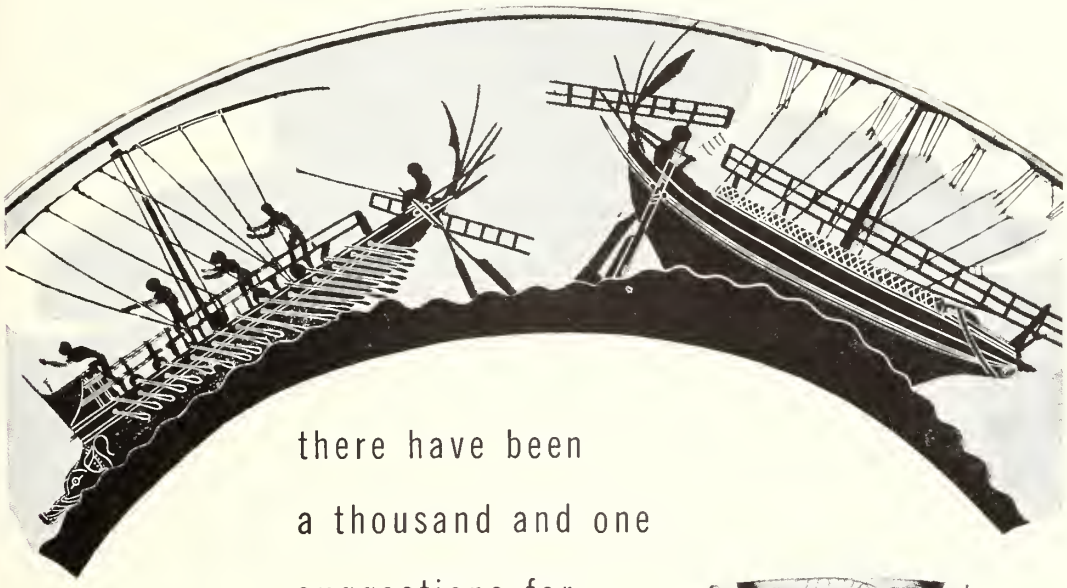
Primarily the book is designed to bring basic scientist and clinician together. The clinical emphasis is on diagnosis and medical management, but there is sufficient radiology and surgery to give the book completeness. Diseases of the esophagus, stomach, duodenum, small bowel, colon, rectum, liver, gallbladder and pancreas are well and briefly discussed, always in the light of the known psysiologic facts relative to each.

The section of the book which I found most appealing is that on the application of neuropsychiatry to gastrointestinal problems. This topic is discussed with illustrative case reports and descriptions of the extensive changes in gross appearance and function of exteriorized portions of the gastrointestinal tract while states of depression and excitation are produced in the subject by conversational stimuli. The facility with which these changes were produced by personal insults, depressing remarks, attitudes of gayety and the engendering of fear and apprehension were remarkable and give credence to the notion that one can play upon his fellow men like so many pipes if only he knows the stops. Remarkable too are the discussions by the psychiatrists which are uncluttered by meaningless argot and are actually intelligible to a "non-psychiatrist."

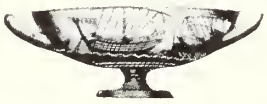
Altogether, this is an excellent book for anyone who must diagnose or manage gastrointestinal disease.

B. L. S.

Ever since man went down
to the sea in ships



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a thousand and one
suggestions for
the relief of
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Postgraduate Review

SOME USES OF THE FEMALE SEX HORMONES

DANIEL L. SEXTON, M.D.
ST. LOUIS

THE LAST THREE decades have brought great advances toward an understanding of the endocrine system and the role it plays in the control of normal body function. Much has been achieved in endocrine therapy through the unravelling of the pharmacologic and physiologic actions of the various known hormones. Pure sex hormones have been isolated, their chemical structures determined and finally, they have been synthesized in the laboratory. During the last two decades the use of these hormones has contributed greatly to sex hormone therapy.

The discovery of Stockard and Papanicolaou[1] in 1917 that vaginal epithelium in the animal changed with estrus was followed some six years later by the work of Allen and Doisy[2] who employed the vaginal smear method of identifying estrogenic substances. These laid the groundwork for the present day understanding of the physiology of the ovary. In 1929, Doisy and coworkers[3] and Butenandt,[4] working independently, recovered estrone (theelin) from urine of pregnant women. One year later Doisy[5] and his group isolated from pregnancy urine a substance, estriol, which was effective when taken orally. In 1929 Corner and Allen[16] devised the rapid method for assay of corpus luteum extract. While many important contributions followed in rapid succession, the way for clinical application of estrogen therapy was truly opened up in 1938 by Dodds[7] and his coworkers who synthesized the nonhormonal estrogen, diethylstilbestrol. This estrogen proved to be inexpensive and highly effective when taken by mouth.

While much remains to be learned, sex hormone therapy has come a long way since its inception when, because of the obvious dramatic effects of its successful use, it was received with understandable overenthusiasm. Since such therapy must be based on an understanding of the pituitary-gonadal relationship, a brief review of present day concepts follows.

PHYSIOLOGY

Ovarian changes are governed by the follicle stimulating, the luteinizing and the luteotrophic hormones of the anterior hypophysis. These hormones control the maturation of the follicle, ovulation, luteinization and the maintenance of the corpus luteum. The ovarian follicle secretes estrogen, the corpus luteum secretes both estrogen and progesterone. Endometrial growth springs from a thin layer of nonsecretory cells filled with the growth enzyme, alkaline phosphatase. Influenced by this enzyme, the cells thicken with maturation of the follicle. Ovulation occurs when maturation of the follicle is completed at about the midportion of the menstrual cycle. At this time and through the action of the luteinizing fraction, the follicle is, in a few days, transformed into the corpus luteum. From then on, the luteotrophic fraction maintains the corpus luteum.

At about the tenth day, the follicle stimulating hormone reaches its peak in the circulation. There is a drop in the follicular hormone during the period of transformation of the follicle to the corpus luteum, while there is a secondary rise during the progestational phase. Corpus luteum hormone is found only during the progestational stage. Just before menstruation there is a sudden drop both in estrogen and progesterone content of the blood. Progesterone changes the endometrial cell from the straight nonsecretory type to the corkscrew type, reputed to secrete a substance necessary for the nidation of the fertilized ovum. If the ovum is fertilized, the corpus luteum continues to function and secretes a large amount of progesterone during the first trimester of pregnancy. If fertilization does not occur, the corpus luteum disintegrates, both estrogen and progesterone are withdrawn from circulation and the endometrium is dismantled by the process of menstruation.

TYPES OF ESTROGEN THERAPY

Estrogens may be administered orally, intramuscularly or topically. Because of ease of administration and effectiveness, oral therapy is preferred. When there is an intolerance to oral therapy or when the latter cannot be employed in adequate amounts, intramuscular injection may be used. There is no proof that estrogens, *per se*, cause local or systemic reactions but occasionally there occurs a reaction to the injected oil vehicle. This may possibly be avoided either by changing to a preparation with a different oil vehicle or by using an aqueous suspension of the estrogen. In the latter case, one must expect slower action. For all practical purposes, the topical application of estrogens may be limited to the treatment of vaginitis where either an ointment, externally applied, or vaginal suppositories are used.

The dosage of estrogen is determined by the purpose toward which it is directed. Small or moderate doses stimulate tissue growth directly while stimulating the pituitary to secrete gonadotropins which enhance somatic growth and aid in the establishment of normal sex functions. Large doses stimulate tissue growth to a greater degree but suppress the pituitary secretion of

"Some Uses of Male Sex Hormones" by Dr. Sexton will appear in an early issue of The Journal.

gonadotropins. Obviously, then, large doses should not be employed in treating oligomenorrhea in an adolescent girl. On the other hand, when development is infantile, large doses are needed until genital growth approaches normal when the dosage must be reduced if normal cyclic bleeding is to be established. Large doses are indicated in those instances in which the aim is to suppress pituitary function.

Diethylstilbestrol,* unlike the steroids chemically, acts like estrogens within the body and, weight for weight, is more potent than true estrogens. In the beginning it frequently causes nausea which, with continued dosage, usually subsides, so that, finally, large doses are tolerated.

Though sufficient amounts of all sterols depress pituitary function, the most effective in this respect is testosterone, the male hormone. For this reason it is frequently used in female disorders when suppression of pituitary function is the aim.

For clinical use, estrogens are available in a variety of forms. These are not all equally effective for all conditions in which estrogens are to be used. As an example, estrone which, because it seems to produce an overall sensation of well-being, is widely used in the treatment of the premenopausal syndrome, but would not be employed when suppression of anterior pituitary function is the aim.

The physician will do well to acquaint himself thoroughly with the effects of the commercial brand of his choice and not change from one brand to another. In this way he may know what to expect from given quantities of the estrogenic materials and will be better equipped to judge the effect of dosages which he has prescribed and to modify them as may seem desirable.

ESTROGENS AND ESTROGEN-LIKE SUBSTANCES, TRADE NAMES

Some of the estrogens and estrogen-like substances and trade names are as follows:

I. Oral:

A. Of hormonal origin:

1. Ethynyl estradiol 0.02 to 0.05 mg., Estinyl, Lynoral.

2. Estrone sulphate 0.3 to 2.5 mg., Amnestrogen, Conestron, Premarin.

3. Estrogenic substances 0.4 to 1 mg., Amniotin, Menformin.

B. Of nonhormonal origin:

1. Diethylstilbestrol 0.1 to 100 mg. tablets. Diethylstilbestrol, "Stilbestrol," Estrobene, Stilbene.

2. Benzestrol 2 to 5 mg., Benestrol.

3. Dienostrol 0.1 to 3 mg., Dienestrol.

4. Hexestrol 0.25 to 3 mg., Hexestrol.

II. Intramuscular:

A. Of hormonal origin:

1. Estrone (in oil or aqueous suspension) 0.5 to 1 mg., Estrone, Theelin.

2. Estradiol benzoate (in oil) 1.66 mg., Ben-Ovacylin, Dimenformin Benzoate, Progynon-B.

3. Estradiol dipropionate (in oil) 2.5 mg., Dimenformin, Di-ovacylin, Progynon-DP.

4. Estrogenic substances (chiefly estrone in oil or aqueous suspension) 0.5 to 1 mg., Amniotin, Estrogenic Hormone, Menformin, Urestrin.

B. Of nonhormonal origin:

1. Diethylstilbestrol (in oil) 1 to 5 mg., Diethylstilbestrol, "Stilbestrol."

2. Diethylstilbestrol dipropionate (in oil) 0.5 to 5 mg., Diethylstilbestrol, Dipropionate.

3. Tri-p-anisylchloroethelyne, Tace.

CORPUS LUTEUM HORMONES, TRADE NAMES

Corpus Luteum hormones, some trade names and dosages include the following:

I. Oral:

Anhydroxyprogesterone 5 to 20 mg., Lutocylin, Pranone, Progesteral.

II. Intramuscular:

Progesterone and Corpus Luteum Extracts 10 to 25 mg., Corpus Luteum, Lipo-Lutin, Lutocylon, Progesterone, Progestin, Proluton.

USES OF EXTROGENIC HORMONES AND SUBSTANCES WITH ESTROGENLIKE ACTION

The clinical uses of these substances might, for convenience, be classified as follows:*

A. To stimulate genital tissue growth:

1. All forms of vaginitis (a) infantile and juvenile, (b) senile.

2. Delayed onset of menses and oligomenorrhea of adolescence.

3. Hypoovarianism of adolescence and of early adult life.

4. Dysmenorrhea when accompanied by signs of ovarian deficiency.

B. To depress anterior pituitary function:

1. Puerperal engorgement of the breasts.

C. To correct endocrine imbalance:

1. Functional uterine bleeding (a) menorrhagia of adolescence, (b) menorrhagia of early adult life.

2. Castration syndrome.

3. Menopausal syndrome.

4. Threatened abortion.

5. Premenstrual tension.

6. Senile osteoporosis.

D. To neutralize androgenic effects:

1. Metastases from prostatic cancer.

TREATMENT

A. To Stimulate Genital Tissue Growth:

1. *Vaginitis and vulvovaginitis.*—(a) Infantile and juvenile gonorrheal. Because of the low resistance of juvenile vaginal epithelium with its high pH, either acute or chronic gonorrheal vul-

* This will be referred to as "estrogen" hereafter.

* This classification lacks physiologic proof but serves from a practical standpoint.

vovaginitis may be found in early childhood. The organism is invasive and resistant to treatment by antiseptics alone. Topical estrogen therapy with juvenile size suppositories results in the change to a more adult type of epithelium with a pH low enough to be unfavorable to the growth of the infecting organism. Additional local sulfonamide treatment may be necessary to eliminate the infection entirely and will, in any case, hasten recovery.

Estrogen therapy involves the insertion each night for a period of from three to six weeks of one suppository containing either diethylstilbestrol, 0.1 mg., or estriol, 0.2 mg. or estradiol, 0.04 mg.

Juvenile vaginitis may also occur as the result of an infection by organisms of lower virulence. One juvenile size vaginal suppository each night for from three to six nights will usually suffice to overcome this type of infection.

(b) Senile Vaginitis. The withdrawal at the time of the menopause of follicular hormone stimulation results in atrophic changes in the vaginal epithelium and lowered resistance to invading organisms. Estrogen therapy stimulates the formation of a more resistant active adult epithelium. As eroded and infected areas become replaced by this epithelium, symptoms subside. Vaginal suppositories, adult size, containing diethylstilbestrol, 0.5 mg., or estradiol, 0.4 mg., inserted nightly for a period of from four to six weeks are recommended.

Efficacious for pruritus of the vulva is an ointment containing enough diethylstilbestrol to allow 0.5 mg. per application or estrone sulphate cream containing 0.625 mg. per gram.

At the same time oral estrogen therapy should be employed in one of the following forms: ethynyl estradiol, 0.02 to 0.05 mg. daily; estrone sulphate, 0.3 to 0.625 mg. daily, or diethylstilbestrol 0.2 to 0.5 mg. daily. The interruption of oral therapy one week out of four is advisable if withdrawal bleeding is to be prevented.

2. *Delayed onset of menses and oligomenorrhea of adolescence.*—When there is any indication for thyroid therapy, dessicated thyroid alone may correct these conditions and therefore should, in such cases, be tried for a period of from six to twelve months before resorting to sex hormone therapy.

Since in the human, available pituitary extracts are ineffective, substitution treatment with ovarian hormones is employed. The aim of such treatment is to duplicate by substitution as closely as possible the hormones as they occur normally. In cases of delayed onset of menses, daily oral doses for twenty-one days of one of the following estrogens are recommended: diethylstilbestrol, 0.5 to 1.0 mg.; ethynyl estradiol, 0.02 to 0.05 mg.; estrone sulphate, 0.3 to 1.25 mg. From the fifteenth day through the twenty-first, anhydrohydroxyprogesterone, 10 mg. by mouth daily, should be added. A rest period of seven days is allowed, then the procedure is repeated in its entirety.

When bleeding starts during the course of therapy, treatment should be interrupted until two days after the cessation of bleeding when it may be resumed on the same schedule. These procedures should be repeated until after three or four months of cyclic bleeding, when the estrogen may be withdrawn but progesterone continued for an additional three months. At the end of this treatment (not less than six months in total duration) anhydrohydroxyprogesterone may be withdrawn. Should menses later cease or become irregular, the plan as outlined may be repeated.

Oligomenorrhea is treated much as is delayed onset of menses. In a few instances, anhydrohydroxyprogesterone alone, 10 mg. by mouth daily, beginning at the fifteenth day of the menstrual cycle and continuing for eight days thereafter, may suffice. It may be necessary to enhance oral therapy with two or three intramuscular injections of progesterone, 10 to 25 mg., or progestin, 10 to 25 mg., during this eight day period.

3. *Hypoovarianism of adolescence and early adult life.*—When infantile genital development and lack of secondary sex characters indicate ovarian deficiency, a prolonged period of hormone therapy is necessary. A suggested plan is to give diethylstilbestrol, 3 to 5 mg, orally each day for six weeks and then to interrupt treatment. If, after a waiting period of ten days, bleeding has not occurred, this dosage of diethylstilbestrol, 3 to 5 mg. daily for six weeks, should be repeated with the addition of anhydrohydroxyprogesterone, 20 mg. per day orally, during the last seven days of the six week period.

If, during the waiting period, bleeding does start, a reduced dosage of diethylstilbestrol, 0.5 to 1.0 mg. daily, is begun two days after the cessation of bleeding and continued for twenty-one days with the addition of 10 mg. anhydrohydroxyprogesterone daily from the fifteenth to the twenty-first day. This schedule should be repeated every twenty-eight days.

When first used, diethylstilbestrol may cause nausea which subsides on continued use or after interrupting treatment for a day or two. In rare instances, persistent nausea may call for a change to ethynyl estradiol, 0.05 mg. two to three times daily at the start and 0.05 mg. daily for maintenance.

After six to eight months of treatment and providing cyclic bleeding occurs, an attempt should be made to withdraw diethylstilbestrol, or ethynyl estradiol, and finally anhydrohydroxyprogesterone. Should this withdrawal result in the cessation of cyclic bleeding, treatment must be reinstituted and continued indefinitely with periodic attempts at withdrawal. Poor mammary development due to ovarian deficiency will respond favorably to this treatment.

4. *Dysmenorrhea.*—Before treatment of this

complaint can be thought of, an exhaustive study must be made to determine the cause. If the dysmenorrhea proves to be of functional origin and associated with an underdeveloped uterus, one of the following estrogens may be tried orally for twenty-one days out of each month over a period of several months: diethylstilbestrol, 0.5 to 1 mg.; ethynyl estradiol, 0.02 to 0.05 mg., or estrone sulphate, 0.3 to 1.25 mg.

A second suggested plan for the treatment of dysmenorrhea of functional origin is the combined use of the female and male sex hormones. After twenty-one days of estrogen therapy, as described, the addition of oral methyl testosterone, 25 mg. daily for four days, may be beneficial. This plan may be tried for two to three months before being rejected. If this fails, an attempt to produce anovulatory menstruation by the oral use of methyl testosterone, 25 mg. daily, combined with testosterone propionate, 50 mg., injected twice during the week before ovulation would be due, may result in a painless period.

When endometriosis is suspected, combined progesterone and testosterone therapy may be considered. Testosterone may relieve the pain by causing atrophy of the ectopic uterine mucosa. The intramuscular injection of progesterone, 25 mg., combined with 25 to 50 mg. of testosterone propionate three times during the week before the onset of menses may be tried for several months.

B. To Depress Anterior Pituitary Function

1. *Puerperal engorgement of the breasts.*—Lactation can be suppressed by the administration of diethylstilbestrol, 5 mg. by mouth three times per day, beginning the day after childbirth and continuing for from three to five days. This may, if elected, be supplemented by intramuscular injections of 25 mg. of the same preparation.

C. To Correct Endocrine Imbalance

1. *Functional uterine bleeding.*—(a) Menorrhagia of adolescence. With adolescent girls who show no demonstrable pelvic pathologic condition except possibly some ovarian enlargement, excessive menstrual flow may frequently be lessened or suppressed by treatment with progesterone, 25 mg. per day intramuscularly, for five days. The male hormone, testosterone propionate, 50 mg. intramuscularly per day, for from three to five days may prove more effective than the female hormone. Two to four days after the last hormone injection a profuse period of four to six days duration may follow. Fifteen days after this period ceases and for the following eight days, anhydrohydroxyprogesterone, 10 to 20 mg. by mouth daily, may promote a normal cycle. This plan of treatment may be repeated until three or four normal periods have occurred. If profuse and prolonged bleeding persists, testosterone propionate, 50 mg. intramuscularly, should be administered daily until bleeding subsides.

In rare instances it may be necessary to perform a curettage, following it by a treatment designed to duplicate natural hormonic action: diethylstilbestrol, 0.2 mg.; ethynyl estradiol, 0.02 mg., or estrone sulphate, 0.3 mg. daily by mouth for twenty-one days supplemented by anhydrohydroxyprogesterone, 10 mg. by mouth daily, from the fifteenth to the twenty-first day. Again it is desirable to pursue this plan of therapy until three or four normal menstrual cycles have ensued.

(b) Menorrhagia of early adult life. Only after one has made certain that the menorrhagia is of functional origin should one employ hormone therapy. For hemastasis diethylstilbestrol, 5 mg. daily by mouth, for eight to ten days will usually suffice. Injections of testosterone propionate, 50 to 100 mg. daily, for three to five days also has proved a most effective means of interrupting bleeding. After bleeding is controlled, subsequent cycles may be regulated by the use of anhydrohydroxyprogesterone, 10 to 40 mg. orally, beginning on the fifteenth day of the menstrual cycle and continuing each day for eight days. On the seventeenth and twenty-first days it is advisable to supplement oral treatment with injections of progesterone, 25 mg. intramuscularly. After three or four normal cyclic periods, treatment may be discontinued but must be resumed should excess bleeding recur.

Even when bleeding is functional, it may be expedient to perform a curettage to remove all endometrial particles which may not have become detached at the time of bleeding, thus permitting a "fresh start."

In those instances in which periods of profuse bleeding alternate with a more or less continual bloody discharge, curettage followed by hormone therapy is suggested: diethylstilbestrol, 0.5 to 1.0 mg. by mouth daily, for twenty-one days supplemented by anhydrohydroxyprogesterone, 10 mg. by mouth daily, from the fifteenth to the twenty-first day. This permits the building up of a healthy endometrium and allows its complete dismantling when menstruation occurs.

2. *Postoperative treatment of castration.*—Treatment varies with the multiplicity and severity of symptoms. By use of one of the following estrogens in indicated doses one may anticipate alleviation of symptoms such as hot flushes, headaches, insomnia and other expressions of nervous instability: diethylstilbestrol, 0.5 to 1.0 mg. daily; ethynyl estradiol, 0.02 to 0.05 mg. daily, or estrone sulphate, 0.3 to 1.25 mg. daily. It may be necessary to supplement oral therapy with intramuscular injections of one of the following: estradiol benzoate, 1.66 mg. once to twice weekly; estrone, 10,000 units once to twice weekly, or estradiol dipropionate, 2.5 mg. at intervals of ten to fourteen days. When the uterus is intact, treatment

should be interrupted one week out of each month in order to avoid endometrial hyperplasia and possible withdrawal bleeding, especially if diethylstilbestrol is used.

3. *Menopausal syndrome.*—Beyond the established fact that a large percentage of the symptoms of the menopause are relieved by estrogen therapy, the relationship of estrogens to the climacteric is not entirely clear. Although in many women the climacteric is characterized by a decrease in blood estrogens and an increase in gonadotropins, this is by no means constant. Frequently, but not always, effective estrogen therapy is accompanied by a reduction in gonadotropins and a reversion of the vaginal smear to the premenopausal stage. Nevertheless, menopausal symptoms may still continue. On the other hand, women who are relieved of their subjective symptoms do not necessarily show corresponding change in the vaginal smear. The most constant and characteristic menopausal symptom—the hot flash or flush—is the one most likely to be alleviated by estrogen therapy.

At the time of the menopause there may emerge dormant personality traits, anxiety or depression states. Quiescent schizoid characteristics may become manifest. Similarly, there may be expected functional changes referable in varying degrees to the nervous, cardiovascular and gastrointestinal systems. In any case, the patient should be completely evaluated and therapy directed toward all objective and subjective disturbances. Estrone and estrogenic substances have gained great popularity in the treatment of the menopausal syndrome because of the feeling of many physicians that they produce an overall sensation of wellbeing.

As a start one may use one of the following: diethylstilbestrol, 0.1 to 0.5 mg. by mouth daily; ethynyl estradiol, 0.02 to 0.05 mg. by mouth daily; or estrone sulphate, 0.3 to 1.25 mg. by mouth daily. Additional parenteral therapy in the form of estrone, 10,000 units intramuscularly once to twice weekly; estradiol benzoate, 1.66 mg. once weekly; estrogenic substances, 0.5 to 1.0 mg. once to twice weekly, or estradiol dipropionate, 2.5 mg. at intervals of ten to fourteen days, may be necessary to bring the symptoms under control. By interrupting treatment for seven to ten days out of each month, endometrial hyperplasia and withdrawal bleeding may be avoided. Estrone sulphate and ethynyl estradiol are superior to stilbestrol in that withdrawal bleeding is less likely to follow. When, after having ceased for a number of months, vaginal bleeding starts, all therapy should be discontinued until such bleeding ceases or until its significance can be evaluated.

Most patients interrupt treatment themselves when they feel better but may return some months later desirous of further therapy. Although menopausal symptoms are not expected to endure more than two or three years, there are exceptional instances in which persistent symptoms have been controlled by estrogen therapy for fifteen to twenty years after the cessation of menses.

4. *Threatened abortion.*—The Smiths[8] have found large doses of diethylstilbestrol effective in preventing abortion due to endocrine dysfunction. They begin with daily doses of diethylstilbestrol, 5 mg., the seventh week after the last period. Every two weeks this dosage is increased by 5 mg. per day so that at the end of the fourteenth week the patient is taking 20 mg. daily. From then on through the thirty-fifth week, the daily dosage is increased each week by 5 mg. until the patient is receiving 125 mg. daily. At the end of this week treatment is discontinued.

In serious systemic disorders such as diabetes or essential hypertension during pregnancy the following of the same plan may help avoid stillbirths and fetal anomalies.

5. *Premenstrual tension.*—Premenstrual tension has been attributed to faulty corpus luteum formation. This condition, commonly encountered during the premenopausal age, is characterized by a variety of complaints including restlessness, emotional outbursts, headaches and, occasionally, mild psychic changes. It has responded both to estrogen therapy given during the early part of the cycle and to progesterone therapy the week before the onset of menses. Diethylstilbestrol, 0.1 to 0.2 mg., ethynyl estradiol, 0.02 mg., or estrone sulphate, 0.3 mg., taken daily for twenty days beginning two days after the cessation of menstrual flow may effect a more normal luteal activity and thus alleviate many of the unpleasant symptoms preceding menstruation, including painful breasts. Similar relief may follow the oral administration of anahydrohydroxyprogesterone, 10 mg. daily, for five to seven days premenstrually with or without progesterone intramuscularly, 25 mg. once to twice during the premenstrual week and without preliminary diethylstilbestrol.

After four to six months, treatment should be discontinued and resumed only if tension recurs. Endocrine therapy should not be initiated without previous careful elimination of organic pelvic disease.

6. *Senile osteoporosis.*—According to Albright, estrogen, progesterone and the adrenocortico nitrogen hormone are first produced at puberty. Estrogen and progesterone disappear at the menopause, while the adrenocortico nitrogen hormone persists until about the age of 65. It is his belief that a lack of adequate amounts of all three substances is responsible for the osteoporosis of old age. The pain which accompanies this condition usually responds favorably to estrogen or estrogen and testosterone therapy. Diethylstilbestrol, 0.2 to 0.5 mg. by mouth daily, may relieve this pain. If not, 1 mg. of diethylstilbestrol combined with 10 to 25 mg. of methyl

testosterone, taken daily by mouth, may be tried.

Such treatment may be effective in both male and female. In the case of the latter, particular care must be taken before beginning medication to exclude by physical examination the possibility of breast tumor or of carcinoma of the genitalia. Interrupting treatment one week out of every four would prevent the annoyance of withdrawal bleeding which may follow when diethylstilbestrol alone is used.

D. To Neutralize Androgenic Effects

1. *Metastases from prostatic cancer.*—Metastatic lesions resulting from cancer of the prostate are definitely benefitted by estrogen therapy. A daily dose of 15 mg. of diethylstilbestrol by mouth, with this dosage doubled if it appears desirable, often will relieve pain and effect general improvement. The size of the original tumor as well as the metastases may decrease. Such therapy may be continued for sixteen to twenty weeks or until symptoms are brought under control. Thereafter the dosage should be reduced to 5 mg. daily and continued indefinitely at this level, being increased again if symptoms warrant. By this plan, orchidectomy may be avoided.

There are confusing reports that, in some instances, after prolonged administration estrogens may lose their effectiveness and that, in such cases, subsequent androgen therapy is beneficial. In Huggins[9] experience, androgens always caused a rise in the blood acid phosphatase with recurrence of metastatic pain. Continued observation, therefore, seems necessary.

Tri-p-anisylchloroethelyne (Tace), a new synthetic estrogen, has given evidence of being more effective in combatting the symptoms of prostatic carcinoma than stilbestrol or estrogens now in use. Following ingestion it is stored in the fat depots of the body with absorption and utilization being prolonged. It is free of toxic effects. Recommended dosage is 24 mg. daily.

CONTRAINDICATIONS FOR THE USE OF ESTROGENS

1. *Cancer.*—Numerous experiments have shown that in various species estrogens exert a blastogenic effect. In cancer susceptible strains of mice, estrogens play an important role in the development of cancer of the breast in both males and females. More prolonged treatment will have the same effect in rats. Leukemia and tumors of the testes have developed in mice following estrogen injections.

The carcinogenic effects of estrogens in the human are still controversial. Because of the high frequency of cancer of the breast in untreated women, it is most difficult to evaluate the relationship of estrogen therapy to the incidence of this condition in women, though in men there seems to be a real increase in its frequency when they have, for many months, been receiving large doses of estrogens in treatment of prostatic cancer. Furthermore, both in this country and abroad, hyperplasia of the breast has been reported in a few males employed in the manufacture of estrogens.

Though the data is not conclusive, it suggests caution in the prolonged use of estrogens.

2. *Liver disease.*—Cautious estrogen therapy is indicated when liver disease is found. Since it has been established that the liver is chiefly responsible for the metabolic breakdown of estrogens, it follows that when there is a pathologic condition of the liver, the amount of estrogens in the circulating blood is high. Thus the addition of even small dosages of estrogens would result in excessive blood estrogen content that might cause detrimental effects.

SUMMARY

The use of estrogens is acecpted in the treatment of menstrual disorders of adolescence, puerperal engorgement of the breasts, hypoovarian syndrome, functional uterine bleeding, the menopausal syndrome, infectious and atrophic vaginitis and metastases from prostatic cancer. In most instances oral estrogen therapy is highly satisfactory. In no case should treatment be begun without careful physical examination of the patient, nor should it be continued indefinitely without interruption. Hepatic disease is a contraindication for hormone therapy; cancer is a contraindication for homologous hormone therapy.

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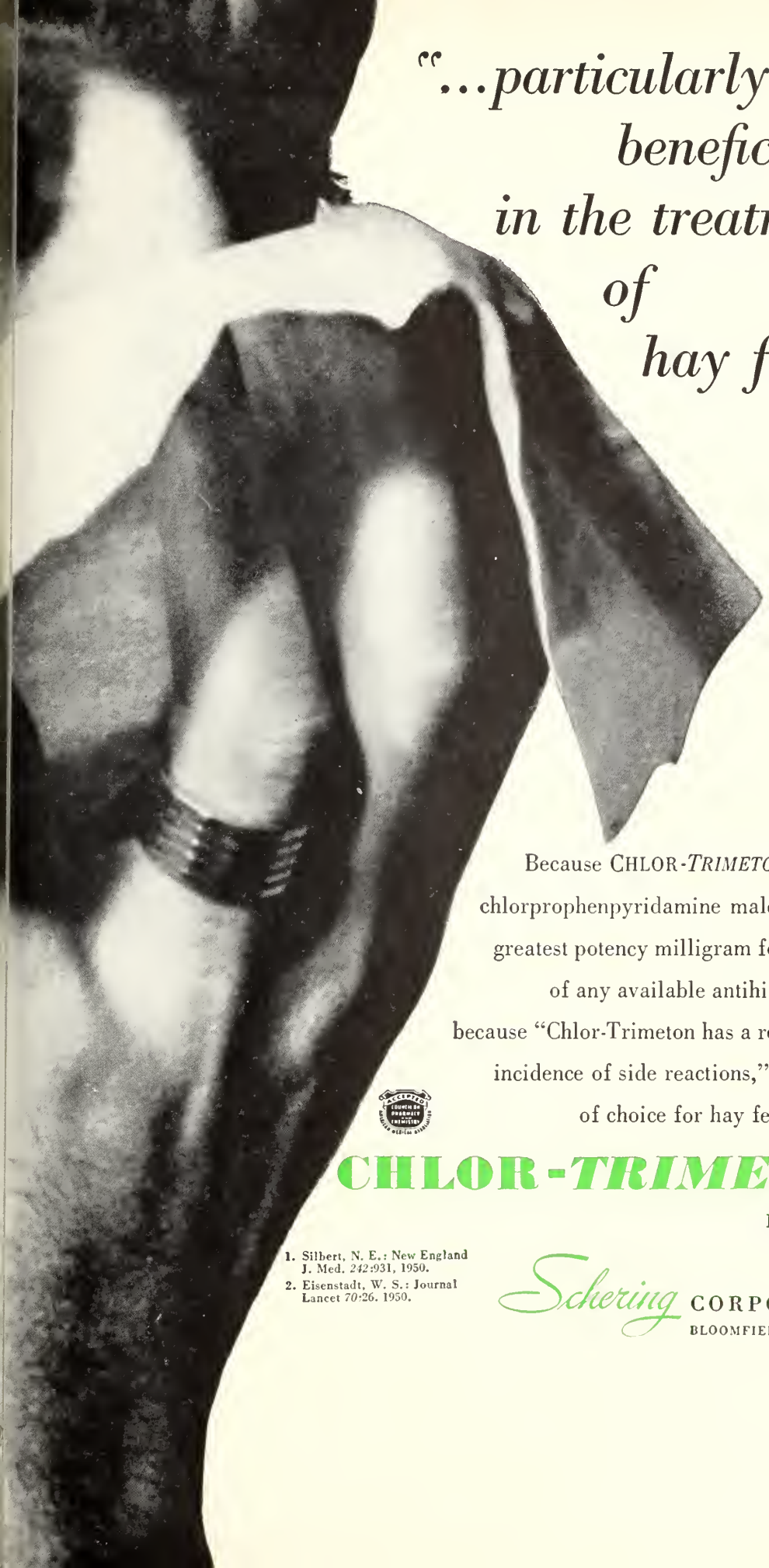
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Clinical Conference

THE DIAGNOSIS OF CANCER OF THE SKIN AND MELANOMA

HYMAN J. GOLDMAN, M.D.
ST. LOUIS

TEACHING POINTS

Suspect skin cancer if:

1. A lesion has rolled, pearly border.
2. A "sore" persists over 10 days.
3. An ulcer bleeds on slight trauma.
4. A keratosis or horn grows or thickens.
5. A mole grows, darkens, bleeds or is traumatized.

H. J. GOLDMAN, M.D.: Cancer of the skin seems the most commonly occurring cancer in Missouri. Before considering actual skin malignancy, precancer lesions will be considered.

First, among precancerous skin lesions, are the keratoses, a rare form of which is illustrated by the patient presented.

For years, Mr. F. S., aged 67, had taken Fowler's solution for pemphigus, and for a year typical punctate, plug-like keratoses, due to the arsenic, have appeared on the palms of the hands.

Some physicians question that seborrheic keratoses actually lead to skin cancer. None question this tendency of senile keratoses. There are some points valuable in differentiating the two types.

Senile keratoses originate on the exposed surfaces of the skin such as the face, neck, dorsum of the hands and perhaps the forearms. Seborrheic keratoses, by contrast, appear usually on the clothed surfaces of the skin. The senile keratoses are light gray in color, or pinkish. The seborrheic type are dark brown in color, or black. The senile type are rough and feel like sandpaper. The seborrheic type have a soft, greasy feel. The senile type form part of the epidermis while the seborrheic type have a stuck-on appearance. So much for keratoses.

Another precancer lesion is leukoplakia, seen chiefly on the lips, in the buccal mucosa and, occasionally, in the vulva. Leukoplakia has a silvery-white appearance.

A third type of precancer lesion is the cutaneous horn, a hornlike projection from the exposed skin of the face, neck or hands. Other precancerous lesions comprise burn scars, kraurosis vulvae and pigmented nevi.

The dermatologist thinks of the nevus as a lesion showing nevus cells under the microscope. These are the common moles.

Tumor Teaching Conference No. 157, January 10, 1952.
From St. Louis University School of Medicine, aided in part by Grant CT 619 USPHS, and by the Missouri Division of the American Cancer Society, and by the Missouri State Division of Health.

Generally one thinks of actual skin cancer in three types: squamous carcinoma, basal carcinomas and malignant melanoma. Clinically, differentiation between squamous and basal cell carcinoma is not attempted although near the midline of face, that is, to the nose, one is apt to find basal carcinoma, and further lateral, that is toward the ears, one expects squamous carcinoma. One must emphasize particularly the rolled, pearly border, possibly containing pearly nodules. The center may or may not ulcerate and it is the border which is characteristic.

In summary, suspicion in the mind of the physician or patient is probably the most important factor in diagnosis of skin malignancy. Suspect any skin lesion failing to heal in ten days. Many lesions other than cancer, of course, require more than ten days to heal and actual cancer may linger on, untreated, many months or even years. The essential factor in diagnosis, however, is suspicion.

GAROLD A. STRYKER, M.D.: When I suspect carcinoma, I never treat the lesion without knowing what is underneath by obtaining a biopsy beforehand. I think that highly important.

E. J. JORDAN, M.D.: To biopsy the lesion in the skin, excise it completely, if it is small. If large, obtain normal skin edge as well as part of the edge of the lesion for the biopsy.

DR. GOLDMAN: It is in the exposed skin of the face, neck, dorsum of hands or of the forearms that skin cancer usually arises. It is in blonde, freckled-faced, red-headed persons, especially farmers and sailors, that skin cancer often arises. The deeper the pigmentation of the skin, the less apt is skin cancer to develop.

A. N. VAUGHN, M.D.: Not a single instance of cancer arose in the skin of negro patients entering St. Mary's Infirmary during 1950, during a year when sixty-two other negro patients developed cancer primary in other parts of the body. Similar observations have been made in the Homer G. Phillips Hospital in St. Louis where negro persons are treated. Evidently the pigmentation in the skin or some other factor such as genetics protects the Negro from skin cancer.

J. P. WYATT, M.D.: Probably of more importance than the pigmentation is an underlying genetic factor. In white skin maybe the asquisition of pigment by sun-light through constant exposure to get sun-tan leads to a more serious condition.

E. L. KEYES, M.D.: So few physicians take the trouble to warn farmer patients to put umbrellas on their tractors, to wear broad brimmed hats as protection for their skin against the carcinogenic effects of the sun. So rarely does one trouble to warn elderly patients of the cumulative effects of the weather on the skin or the young against ex-

cessive sunbathing as a potential cause of subsequent skin cancer. True, physicians are more careful about warning physicians to shield themselves against overdosing their skin with gamma radiation, whether from x-ray or from radium but are apt to overlook large burn scars in children, disregarding their later potency to develop skin cancer.

Dr. Goldman: A long list of occupational products predisposing to skin malignancy has been compiled by Dr. Hueper[1] of the U.S.P.H.S., such as arsenic, certain oils, radium paint for watch dials. Industrial physicians can refer to his work. Potts cancer of the skin of the scrotum among chimney sweeps, caused by soot, is not seen simply because one no longer sees chimney sweeps.

Certain moles tend to become malignant, especially moles on the toes or fingers, hands, feet and waist and other areas subject to irritation.

A nevus, removed from a child under 14, may microscopically show evidence of malignancy, yet actually act in benign fashion, with certain rare exceptions.

CASE REPORTS

Mr. A. S., aged 79, has a scaley senile keratosis in the skin of his left cheek.

Mr. W. B., aged 72, had a 1 centimeter cancer of skin of the left ear excised June 8, 1946 by E. T. Dmytryk, M.D. under local anesthesia, histologically squamous carcinoma. A mass appeared beneath the left jaw three years later, suspicious of metastases, but proven mere salivary gland, on removal and biopsy December 16, 1949. To date, five years later in 1951, the patient remains clinically well. This illustrates the curability of skin cancer, by means of surgery.

Mr. E. S., aged 55, had a 1 centimeter cancer of the skin of the right cheek treated by radium in 1939 by E. J. Jordan, M.D. The dose was 180 milligram-hours, using 30 milligrams for 6 hours, screened with ½ millimeter of platinum, 1 millimeter of rubber. To date, eleven years later, the patient remains clinically well. This illustrates the curability of skin cancer by means of radiation.

Dr. Keyes: How not to treat skin cancer is illustrated by Mrs. B. S., aged 68, who had a typical 3 centimeter skin cancer of the dorsum of the right hand treated as a cyst—a physician punctured it with a needle, on two occasions.

Melanoma has been mentioned, and I should like briefly to outline some of its diagnostic difficulties, as illustrated by the following case history.

Mrs. W. O., 41 years old, had her right middle finger stuck for a blood count in the course of removing a kidney stone. The fingertip gave no trouble for four months when she dropped a window onto it and noticed a black spot slowly growing on the fingertip. Both she and her physician thought this a wart, and the patient kept pulling it off with a needle, while the physician treated the fingertip twice with x-ray therapy.

After growing for a year, a biopsy finally was taken, and the histologic report was melanoma of the fingertip. So little credence was given the biopsy, that it was twice repeated during the ensuing year.

Certainly the lesion, itself, looked harmless. When I saw it, through the courtesy of C. W. Lane, M.D., it looked like a benign, flat wart half a centimeter in diameter, on the fingertip; and only if inspected carefully could faint streaks of bluish pigment be seen nearby. No node was palpable in the epigrochlear region, and only a soft node, 1 centimeter in diameter, in the axilla.

Two years after it began to grow, the melanoma was removed from the fingertip by means of amputation of the right middle finger through the right middle metacarpophalangeal joint, in 1948.

Now, no one paid heed to the axilla for two more years, when the patient herself, because she had been warned, reported back with the right axillary node grown to a diameter of 3 centimeters. It was biopsied July 13, 1950, at St. John's Hospital, appeared black, and microscopically was shown to contain metastatic melanoma; so, immediately, a radical dissection of the right axilla was performed, removing in addition to the lymph nodes all of both pectoral muscles save the clavicular fibers of the pectoralis major. It was interesting that only the one node and none of the others in the right axilla, histologically, contained metastatic melanoma.

At present, in 1952, the patient remains clinically well, one and one-half years after axillary dissection for metastatic melanoma, and almost four years since amputation of the finger. The epitrochlear nodes have never enlarged.

Dr. Stryker: Probably 20 per cent of the general practice of a physician is dermatology; and of all skin conditions up to 50 per cent comprises keratosis of various types, particularly seborrheic keratoses. So common over the age of 30 that by the age of 50 there are but few persons without seborrheic keratoses somewhere in the skin.

Seborrheic keratoses always occur around the upper part of the chest, back, arms, shoulders and around the head and scalp; they are rare on the thighs. The etiology is unknown. The common type is yellow, soft, and the top is easily removed by wiping gently with a piece of gauze leaving a verrucous or warty remnant in the skin. The color, while usually yellow, may be black; but if black, it does not mean it is melanoma or ever will become melanoma. Oxidation of epithelial cells will produce a secondary black reaction which looks like melanin. I do not feel that seborrheic keratoses should be stressed as potential cancer; and I say that no physician who has seen many of them has ever seen a seborrheic keratoses degenerate into carcinoma. I do not recommend exciting the patient and going through surgery to excise keratoses of this type; patients do come in excited by cancer drives. One should calm hysteria by the information that seborrheic keratoses are not cancer.

On the other hand senile keratoses are definitely potential cancer, which should be recognized and treated as such because a definite but small percentage of them become carcinomatous. It is important to recognize the time when the malignant changes begin, and the best indication is a zone of erythema or reddness around the senile kerato-

1. Hueper, W. C.; Environmental Cancer; U. S. Government Printing Office, Washington 25, D. C.

sis. When one sees this zone one should remove the keratosis; but if there is no indication of the erythema and no other sign of activity, one need not remove it. The zone of erythema is a sign which is not emphasized nearly enough.

C. F. SHERWIN, M.D.: It is easy to bake senile keratoses in the office under local anesthesia, and so prevent many skin cancers. One must bake them deeply, however.[2]

DR. STRYKER: It is important to examine skin lesions microscopically when they are removed. Do not do the "scrap basket" test, and toss them out. Some cytologists think they can diagnose skin cancer by looking at one cell and finding evidence for early metaplasia. Other cytologists believe that senile keratoses, even early in their evolution, are more than percancerous lesions and are even then actual cancers. From this viewpoint, skin cancer can remain dormant, so to speak, for many years. Though dormant, it should not be neglected, easily accesible as it is.

CASE REPORT

A woman with cancer of the ala nasae, Mrs. P. M., aged 64, had noted for some months an ulcer growing between the right cheek and the nose until it measures 5 centimeters in diameter, with a rolled, pearly border. It is still freely movable on the underlying tissues. Biopsy has proven it basal cell in type. To date, over a period of 2 weeks' time, Dr. Weir has given her 3,000 r units of x-radiation in divided doses to the area.

Cancer in the ala nasae tends to recur despite attempts to cure it by surgery or by radiation. Essentially this tpye of skin cancer is benign in that it grows slowly. However, it is malignant in that it tends to recur. Cells extend far beyond the apparent margin of the lesion so that surgically not nearly enough skin is removed at the first treatment, due to fear of mutilating the nose of the patient. The same holds true of the ear, where cancer looks easy to handle but actually where after one area has been removed, another nearby is likely to recur and even a rather wide area of adjacent tissue may be in the process of breaking down.

D. C. WEIR, M.D.: There are some areas where radiation therapy seems definitely indicated. The ala nasae is one such area because reconstruction work after surgery is so difficult, whereas radiation is followed by a good cosmetic result. Similarly, lesions on the eyelids should be radiated. Nearness to the eyes is no contraindication either to x-ray or to radium, provided the globe of the eye is adequately protected either with lead or gold shields, rubber covered.

DR. WYATT: Skin comprises two layers: the squamous and basal layers, and there is a striking difference between the two. Epidermoid or squamous carcinoma of skin tends to lymphatic involvement, and also to blood vessel invasion; whereas, basal cell carcinoma is locally malignant. The third type of malignant new growth derived from the pigmented basal area is considered by Masson to be neurogenic in origin, that is, malignant melanoma.

DR. KEYES: In Missouri, the skin seems the commonest site for cancer. Table 1 illustrates this point.

Table 1. *Commonest Cancer in Missouri*[3] *Clinic and Hospital Admissions*

A. Barnard Free Skin and Cancer Hospital—1930-1942				
Commonest:	Skin	melanoma	lower lip	Total
	4,476	148	1,190	5,814
Next:	Cervix Uteri		endometrium	Total
	1,740		170	1,910
B. Ellis Fischel State Cancer Hospital—1940-1943				
Commonest:	Skin	melanoma	lower lip	Total
	842	42	153	1,037
Next:	Cervix Uteri		endometrium	Total
	285		54	339

DR. WYATT: In St. Louis, necropsies indicate skin only seventeenth in order of frequency as the primary site for cancer.[4] Only forty persons had necropsies for skin cancer from 1935 to 1950 compared with the leading necropsy—cancer of the large intestine with 328 necropsies. Primary pulmonary malignancy occupied second place, with 242 necropsies.

DR. SHERWIN: To me, these statistics indicate merely that cancer is readily curable when it occurs in the skin for cancer proved commonest in the skin among persons admitted to clinic or hospital and, being readily cured, ranked but seventeenth in causes of death, following the patients to the end.

DR. KEYES: Mention of the predominance of skin cancer amongst males as compared with females has been omitted from our statistics. During 1950 in Firmin Desloge Hospital ten skin cancer patients were males, with but three females.

In age the youngest skin cancer patient during 1950 was 35 years old. The average age was 62 years. The oldest patient, that year, was a man of 87.

The skin of the exposed face, nose, eyelids, forehead and ear has been mentioned as sites for the origin of cancer, and of thirteen skin cancers during 1950, ten arose in these regions compared with but three skin cancers arising in the clothed parts of the body, the skin of the neck where the remaining three originated.

2. Sherwin, C. F.; The Actual Cautery in the Treatment of Superficial Cancers; J. Missouri M. A. **17**:269 (July) 1920.

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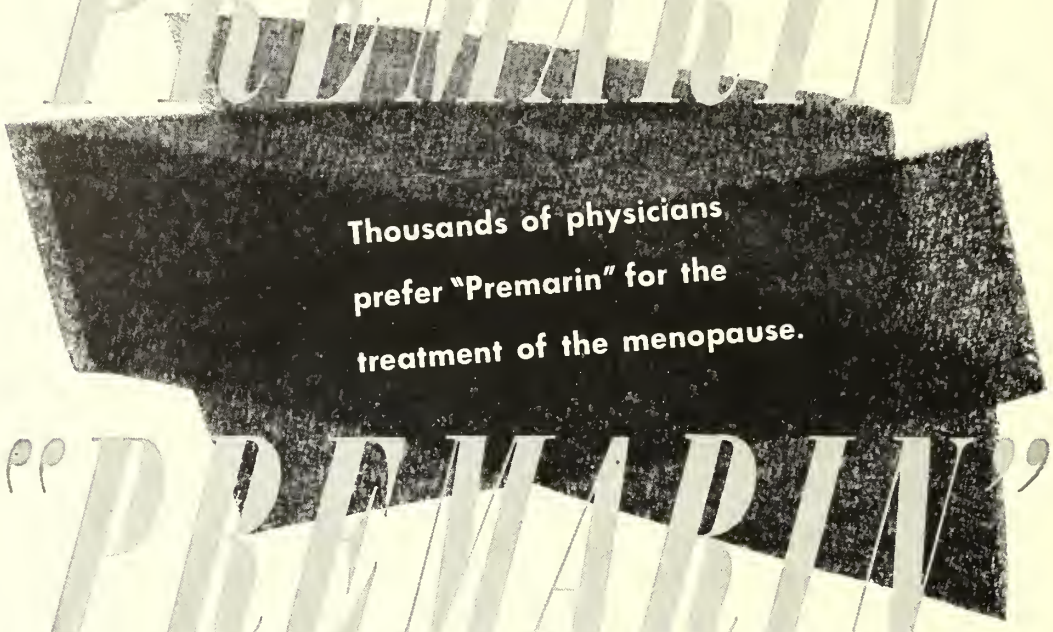
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Case Report

UNDIAGNOSED CARCINOMA OF THE PANCREAS

A Case Report

MAURI FELDAKER, M.D.
CLAYTON
and
STANLEY Y. JORDAN, M.D.
CLAYTON

Carcinoma of the pancreas has been estimated to be present in 0.1 per cent of all patients admitted to large general hospitals.[1] In one series approximately 60 per cent of proven pancreatic carcinoma involved the head of the organ. Carcinoma of the body and tail are usually larger and spread by direct extension. The early symptoms of pancreatic carcinoma are vague and the diagnosis is often made only at the autopsy table. Pain is the most common early symptom especially when the tail and body of the pancreas are replaced by tumor. The pain is dull, aching and progressive. It usually starts in the epigastrium and radiates to the back and flanks. The pain is worse at night when the patient is lying down. Jaundice is frequently the only finding to indicate a pancreatic malignancy. Painless jaundice was present in 17.6 per cent of one large series of pancreatic tumors.[2] Weight loss is common and is progressive. Physical examination in most cases is not remarkable. A distended gallbladder or pancreas was palpable in approximately 37 per cent and the liver edge was palpable in 63.2 per cent.[2] The laboratory tests may show glycosuria, anemia and occult or gross blood in the stools. The latter appears when there is invasion of the intestinal tract by tumor. Positive radiologic signs were present in 37 per cent. The clinical findings may simulate gallbladder disease or peptic ulcer. In a summary of ninety-six patients with pancreatic tumors, eight of them had a cholecystitis.[3] The case reported showed cholelithiasis as well as a carcinoma of the pancreas.

CASE REPORT

A 70 year old Negro woman was first seen at St. Louis County Hospital on September 13, 1951. She complained of anorexia and weight loss for two months, dull aching pain in both shoulders and lumbosacral regions which often awakened her at night and was worse when lying down. She had passed one large tarry stool. Dyspnea, palpitation, ankle edema and nocturia had been present for several years.

Physical examination revealed an elderly woman who was chronically ill and had pitting edema of both legs. There was no icterus. Blood pressure was 188/75, pulse 76. The heart was slightly enlarged to the left with grade II apical and aortic systolic murmurs. There were a few scattered rales at both lung bases. The liver edge was palpable and there was a slight tenderness in both lower quadrants of the abdomen. Rectal examination revealed a palpable mass in the cul-de-sac and light yellow colored stool. Pelvic examination showed a retroflexed uterus with a fibroid tumor 8 cm. in size.

Laboratory findings were as follow: urine normal, red blood count 4.74 million, Hg. 12 gms., white blood count 4,500, nonprotein nitrogen 29 mg. per cent, stools negative for blood. A proctoscope was passed 16 cm. but nothing abnormal was found. A gastrointestinal series was normal. The electrocardiograph showed low amplitude "T" waves, interpreted as myocardial insufficiency.

The patient was discharged after sixteen hospital days of symptomatic treatment. She was seen once in the Surgical Clinic for vague back pains, nausea and anorexia. She was treated symptomatically with iron salts and belladonna.

She was brought to the St. Louis County Hospital for the second and last time on December 13, 1951, at which time she was semiconscious and unable to speak. History as given by friends was that the patient had had jaundice for three weeks with light colored stools and dark urine. On the day of hospital admission she had been unable to speak or swallow and had developed left hemiparesis. Physical examination revealed ptosis of the left lid and left hemiparesis. She was deeply icteric. The lungs were clear, the heart had numerous extrasystoles. The blood pressure was 90/60. The liver edge was palpable 5 cm. below the right costal margin. The rectum was filled with a large amount of clay colored stool.

Laboratory tests revealed a red blood count of 2.97 million, Hg. 10 gms., white blood count 10,850, urine normal, nonprotein nitrogen 48 mg. per cent, diastase 164 mg. per cent, bilirubin 1 minute 5.2 mg. per cent, total 24 mg. per cent. Alkaline phosphatase was 37.7 King-Armstrong U., cephalin cholesterol flocculation 3 plus in forty-eight hours. Total protein was 4.7 gms. with 2.3 gms. albumin and 2.4 gms. globulin.

A spinal tap was done and showed no significant changes except for 5 white blood cells and 28 red blood cells. The patient's temperature rose from normal to 103 F. She developed Cheyne-Stokes respiration and died on December 14, twenty-four hours after admission. The clinical diagnosis was hypertensive cardiovascular disease, cerebral vascular accident and icterus of unknown etiology.

Pathologic Examination.—Autopsy was performed four hours after death. Skin, mucous membranes, all organs and body fluids were deeply icteric. The lower lobes of both lungs were moist and dark red in color. The liver weighed 1,500 gms. and was smooth, dark greenish brown in color. On crosssection the bile ducts in the liver were dilated and filled with inspissated bile. Both hepatic ducts were 3 cm. in diameter and contained numerous calculi. The gallbladder was 15 cm. in length and 8 cm. in width. Its wall was tense and thin. It was filled with clear thin fluid and numerous 1 to 5 mm. fasceted stones. The cystic duct was 1½ cm. in diameter and obstructed by a large firm round stone. The common duct was surrounded and compressed by firm yellow white nodular tumor tissue.

From the Medical and Pathologic Service of the St. Louis County Hospital, Clayton.

This tissue was part of a firm mass extending from the first and second portions of the duodenum to the hilus of the spleen. It had completely replaced the normal pancreas and was attached to the stomach, spleen, left adrenal and left kidney. On crosssection the mass consisted of firm, glossy, yellow-white tissue with numerous 1 to 2 mm. round white areas scattered throughout. Thick white mucoid material could be expressed from the cut surface. There was no gross invasion of the adrenals, kidneys or spleen. Microscopic examination showed edema of the lungs with large numbers of polymorphonuclear cells in the alveolar walls and alveolar lumen. In the liver there was a marked increase in the bile ducts, all of which were filled with golden yellow material with complete destruction or distortion of the lining epithelium. There was marked congestion of the liver lobules. Tumor cells had almost completely replaced pancreatic tissue with dense connective tissue containing large and small acini. These acini were lined with cuboidal or columnar cells with large basophilic nuclei and slight cytoplasm. The nuclei varied in size and shape and contained numerous mitotic figures. Many of the acini were filled with acidophilic mucoid debris. In the spleen there was one small area in a trabecula which contained tumor cells. The left adrenal showed some microscopic invasion but none was seen in the left kidney. The pathologic diagnosis was adenocarcinoma of the pancreas with cholelithiasis and ectasia of the common bile ducts. No definite cause of the patient's neurologic signs was found on examination of the brain. No thrombosis or cerebral hemorrhage noted.

DISCUSSION

This case illustrates the vague abdominal complaints, the weight loss and the lack of physical and laboratory findings so often seen with pancreatic tumors. Although it is possible that the terminal jaundice in this patient was due to an impacted common duct stone it is not necessary to postulate that such an occurrence as obstruction due to tumor was definitely present. It is interesting that this patient had a diastase determination within normal limits even though the pancreas was completely replaced by tumor. The cause of the left hemiparesis with ptosis of the left eye lid is not evident. There was no gross hemorrhage in the brain or a thrombus in any of the cerebral vessels. Microscopic examination of the brain was also negative for any lesions that might have caused her hemiparesis. It is possible that a small occlusion in a vessel was overlooked.

SUMMARY

A case is presented of pancreatic tumor, first seen with vague abdominal complaints and without jaundice. It was only after jaundice was present and the patient in a terminal state that the correct diagnosis was considered.

St. Louis County Hospital.

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CINCINNATI

INJURIES OF THE KIDNEY

Injuries to the kidney range from a mild contusion without rupture of the capsule through all grades of rupture and crushing to complete severance of the vascular pedicle. There may be no other injuries or there may be accompanying injuries such as lacerations, fractures of ribs, limbs or skull, puncture wounds. The kidney may not be the only internal organ damaged and in many instances the injuries to other organs are more important than that to the kidney.

Injuries to the kidney result from (1) falling against a rail or other edge; (2) collision with others in sports such as football, baseball, hockey; (3) a blow on the abdomen or flank by a piece of machinery or falling object; (4) crushing injuries, as between two cars; (5) automobile, coasting and skiing accidents, and (6) gunshot wounds.

Diagnosis is usually not difficult. The appearance of blood in the urine in any amount, large or small, combined with the history of injury and pain in the flank is usually sufficient. Usually present are other findings such as tenderness and perhaps tumor in the kidney region, rib fracture or local body lacerations.

It is more difficult to determine the severity of the injury to the kidney and for this pyelography is essential. Excretory pyelography often shows only non-function of the affected kidney; but retrograde pyelography, if feasible, will usually show the extent of rupture and of destruction of the normal pelvic architecture.

Treatment is directed, first, to the saving of life and, second, to the conservation of renal tissue and function.

The patient's general condition is the most important guide to the immediate treatment. If the general condition is good and remains so, with normal or rising blood pressure and no evidence of increasing or serious hemorrhage, a period of quiet rest is the best treatment. Especially in children, this should not be cut too short. If the pyelograms show no great deviation from normal renal architecture, both the patient and his kidney may be expected to recover completely.

If condition at first is good but deteriorates with falling blood pressure, evidence of increasing hemorrhage and a growing mass in the flank or upper quadrant, or if the patient is in collapse when first seen, transfusions should be given and the degree of renal injury determined by pyelography. If this shows no great deviation from normal, it is still advisable to refrain from operation and trust to rest and further transfusion since most of such patients will recover. A few may require operation later because of perinephric abscess, cyst or hydronephrosis.

When the pyelogram reveals that the kidney is blasted beyond recognition and especially if signs of progressive hemorrhage are evident, prompt nephrectomy is indicated, provided the patient's general condition will permit. Experience has shown that nephrectomy in the presence of severe shock is often fatal. In gunshot wounds with concomitant bowel perforation the whole attention should be given to the bowel and no attempt made to repair or remove the kidney unless the patient is an excellent surgical risk.

In summary, it is safe to say, first, that the great majority will recover without operation, but there is a small group in which the kidney has been irreparably damaged and must be removed; second, operation on the kidney during shock is absolutely contraindicated, and, third, retrograde pyelograms give essential information often not obtained from excretory pyelograms.

INJURIES OF THE BLADDER

Except for the penetrating wounds of warfare and the occasional accidents of pelvic and transurethral surgery, rupture of the urininary bladder almost always occurs as a complication of fracture of the bony pelvis. Fully 95 per cent of bladder ruptures encountered in civilian practice are from this cause. Indeed the coincidence is so classical that in every case of pelvic fracture bladder rupture should be suspected and immediate examination carried out lest it be overlooked and hours of serious urinary extravasation occur before it is discovered.

With the pubic arch or one of the pubic rami splintered, a spicule of bone cuts or pierces the front bladder wall. Accumulated urine within the bladder flows out into the loose areolar tissue of the space of Retzius from tonic bladder contraction and, thereafter, that which is excreted continues to extravasate. After only a few hours of this leakage, extensive extraperitoneal extravasation of the pelvic cavity occurs with severe phlegmonous destruction of the infiltrated tissues and extreme general toxemia from local absorption. In these rare instances in which the bladder fun-

Prepared for the Committee on Trauma of the American College of Surgeons by a Special Committee of the American Urological Association.

dus is ruptured, the leakage is intraperitoneal and, surprisingly enough, far better tolerated than when the perivesicular structures are infiltrated.

The symptoms of bladder injury are often obscure until such time as extensive extravasation has occurred. Unless bladder injury is suspected the deep pubic distress can easily be mistaken for the pain of the pelvic fracture. Occasionally persistent bladder spasm occurs with so-called bloody anuria, i. e., frequent attempts at voiding but passing nothing but a few drops of blood. Far more often than not, if bladder injury is not suspected and adequate examinations made, the situation will go unrecognized until board-like rigidity of the lower abdomen develops from peritoneal irritation. Meantime increasingly profound general symptoms develop.

The diagnosis depends entirely upon direct examination. Every patient with pubic fracture should be catheterized at once. If a catheter enters readily, the urethra is not seriously damaged. If some quantity of clear urine is obtained, the bladder is not damaged. Indeed, one may then be certain that no injury has occurred anywhere throughout the urinary tract. If a sizeable quantity of urine is obtained, even though it may be bloody, there is reasonable assurance that nothing worse than bruising of the bladder wall has occurred and an indwelling catheter for a few days is all that may be necessary. (Excretory urograms should, of course, be done to exclude renal injury causing the bleeding).

But if the catheter enters the bladder readily and nothing is obtained but a little watery or clotting blood, bladder rupture is almost a certainty.

The simplest means of confirming the diagnosis of bladder rupture is both time honored and, if done under proper sterile technic, quite safe. A measured quantity of sterile water (perhaps 200 cc.) may be injected through the catheter and, if little or none can be recovered, bladder rupture is almost certain. If the exact amount can be recovered, bladder rupture is not likely to be present.

While this simple procedure is quite useful as a makeshift, there is room for error and it is far better, when possible, to use a small amount of opaque medium commonly used for intravenous urography, adding it to 200 cc. of sterile water, and take a cystogram (anteroposterior and semilateral). Diffusion of the dye in the extravesical tissues of course cinches the diagnosis.

The treatment of bladder rupture entails two things—and the quicker they are accomplished the better. First, further extravasation must be stopped at once by an emergency cystostomy. Second, all of the loose areolar tissue in front and at the sides of the bladder presenting the telltale watery appearance of extravasation must be opened widely by finger dissection and drained by multiple Penrose drains. While it is far less urgent than either of these, some attention should be paid to the bladder injury itself. Usually this amounts to nothing more than a small puncture wound in the front bladder wall that can be closed with a single stitch or even used as the cystostomy opening if near the midline. Unless extravasation has been unusually extensive the drains can be withdrawn gradually after a few days and a Foley bag catheter exchanged for the cystostomy tube until the wound has healed.

INJURIES OF THE MALE URETHRA

Injuries of the male urethra require early recognition and prompt treatment. The immediate danger is shock and extravasation. Minor injuries may heal spontaneously while severe injuries are surgical emergencies. They may be divided into two groups: (1) anterior urethra, which includes the bulbous portion, commonly involved in straddle injuries, and (2) posterior urethra, more often involved in fractures of the bony pelvis.

Symptoms and Diagnosis.—(1) Blood at the meatus is the earliest and most common sign. (2) Retention of urine occurs in severe injury. (3) The swelling of urinary extravasation may be seen in the perineum, scrotum or lower abdomen if the patient has urinated. (4) Rectal examination is valuable in posterior urethral injury. In complete rupture the prostate is rendered movable and dislocated upward. (5) Catheterization is imperative to determine the degree of injury but must be done with utmost gentleness and strict asepsis.

Treatment.—If catheterization is possible, a Foley bag catheter should be left indwelling to prevent voiding with the danger of extravasation. (If clear urine in quantity is obtained, there is assurance that injury of the bladder has not occurred.)

If a catheter will not pass, it is evidence that complete rupture has occurred. Two problems at once present themselves: first, extravasation of urine and, second, reestablishing continuity of the urethra. Fortunately an asthenic retention often occurs and the patient is seen before he has extravasated his torn tissues by voiding. In such an event immediate cystostomy must be done. If delay is unavoidable, suprapubic trocar puncture is justified.

If the patient has already extravasated his tissues by voiding, immediate cystostomy still is indicated to avoid further extravasation. At the same time, wide incision and drainage of the extravasated areas must be done to prevent massive tissue sloughing and infection.

With the bladder open a sound can be passed from within outward to meet a second sound passed into the urethra. Holding metal on metal the outer sound can be guided past the fault in the urethra and advanced into the bladder. The heel of an ordinary catheter may then be pushed tightly onto the tip of the sound and drawn back out of the urethra. The tip of a Foley bag catheter

may then be stitched to the plain catheter and drawn into the bladder and inflated. It is left indwelling two or three weeks as a splint over which the urethra will bridge and heal. It also offers perfect bladder drainage so that cystostomy drain can be removed in a few days and the wound allowed to heal.

Injury of the female urethra is uncommon. A catheter can usually be passed and may be left in place from five to ten days, depending upon the extent of injury.

INJURIES OF THE EXTERNAL GENITALIA

Closed wounds, such as contusions or rupture of the penis, are treated expectantly. Large hematomas should be evacuated under rigid asepsis.

In open wounds of the penis and scrotum, general surgical principles apply. Restore normal conditions as far as possible. If the testis is avulsed, but blood supply is intact, replace it in the scrotum. Primary repair is usually possible and seemingly hopeless wounds will often heal without difficulty. The following procedure is recommended: (1) Cleanse with soap and water, and irrigate with saline. (2) Save every bit of viable skin. It is seldom necessary to trim skin edges. (3) Control hemorrhage. Compression may be applied to the penis over an indwelling catheter. Sutures may be necessary in bleeding from corpora. (4) Close without drainage, using absorbable suture to skin of scrotum. If skin is totally denuded and inadequate for closure, apply fine mesh vaseline gauze and arrange for early split thickness skin graft. (5) Protect with antibiotics and administer antitetanus therapy.

COOPERATION BETWEEN THE DOCTOR AND THE MEDICAL ILLUSTRATOR

PHILIP A. CONRATH
ST. LOUIS

WITH THE INCREASING use of illustrations in articles on research in medicine, on surgical technic or on pathology, it becomes apparent that publication of articles has become more costly. In a previous article[1] a short description was given of the mechanical engraving processes an illustration must undergo, be it photograph, pen and ink drawing or wash drawing, before it is published. The labor involved in these processes makes the reproduction of illustrations bear the larger share of the cost of publishing an article. While it is true that medical journals are generous in their allowance of illustrations, still there must be a limit to their number and the expense of any above that must be borne by the author. Nevertheless, an article should be adequately illustrated so that none of its effectiveness is lost.

Sometimes an article is returned to the author by an editor because of too many unnecessary illustrations or because the pictures do not adequately illustrate. This may be the fault of the illustrator or it may be the fault of the author. Usually the fault is in the failure of the author and the illustrator to understand each other. In speaking to a group of medical illustrators, Dr. Lattimer[2] had this to say: "Almost all of the troubles which you have with doctor clients stem from the doctor's ignorance of your art. You must be able to explain to them what things are possible, what things are impossible, and how they can help you. . . . When a practicing physician becomes interested in some pet specialty, he is likely to collect a few more cases than the next fellow, and he is likely to publish them. He will call upon you for from two to six illustrations since no more than six are usually permitted in medical journals. These illustrations are rarely as well thought out as his text. He needs your help in preparing the illustrations.

"You must show him these errors diplomatically because many of these surgeons are dominating people. They have been taught to rule the operating room and may spoil your picture before you can raise your voice in objection."

There was a time when the physician or surgeon had a poor opinion of a medical illustrator or "artist" as he was then called. This opinion was justified because in those days the artist had no formal training in medical illustration and he had a limited knowledge of anatomy and pathology. This opinion persists in the minds of some medical men although many causes of the misunderstanding have been eliminated.

Medical illustration is a profession today that has been given deserved recognition by medicine and is indeed in partnership with it. The scope of medical illustration has been widened to include many more services than merely the illustrating of textbooks or articles for publication. Varied media and technics are employed. For example: there is drawing in line and halftone both in black and white and in color; there is photography, cinematography and photomicrography in black and white and in color. Modeling and the preparation of moulages utilizing materials such as clay, plaster, latex and plastics is an important part of medical illustration. Animated drawings are increasingly being used in the preparation of cinema films. The design and preparation of scientific exhibits in which all of these technics and media may be combined is also one of the many functions of a medical illustration service.

Many universities in the United States and in Canada have granted full academic rank and tenure to medical illustrators. Johns Hopkins University was the pioneer in this movement when, at the insistence of Dr. Thomas S. Cullen, the Department of Art as Applied to Medicine was established in 1910 with the late Max Brödel as its director. Tom Jones, Professor of Medical and

Assistant Professor of Medical Illustration and Director of the Section, St. Louis University School of Medicine.

Dental Illustration at the University of Illinois, illustrator, teacher, lecturer and author, has long been director of illustration at that institution after having begun his career at St. Louis University. The list has lengthened until today most of the leading medical schools have medical illustrators on their faculties.

The federal government has recognized the importance of medical illustration in the communication of medical knowledge. In 1918 the Division of Laboratories of the Chief Surgeon's Office,[3] A.E.F., established an Art Section under the direction of the late Dr. Louis B. Wilson of the Mayo Clinic. Many drawings and wax models were prepared by a corps of medical illustrators at various hospital centers in France. In World War II the work was carried on in every major theater of the war. The Department of Defense Institute of Pathology, the U. S. Public Health Service and the Veterans Administration all have staffs of medical illustrators. The Canadian government also maintains a medical illustration service for its veterans hospitals.



Fig 1. Chorioepithelioma with hydatidiform mole. Drawing from fresh specimen.

The Mayo Clinic, the Lahey Clinic and other private clinics throughout the country have sections on medical illustration. That distinguished teaching hospital, the Massachusetts General Hospital, has a medical illustration service as well as a school for training medical illustrators. There are a number of schools with a high standard of admission requirements. The course of instruction in many ways parallels that of the medical student. Upon successful completion of the course the graduate is not only capable of doing excellent technical work, but can converse intelligently with the doctor on the problem at hand.

As a result of the ever widening scope of medical illustration, professional societies have come into existence. Two of these are the Association of Medical Illustrators and the Biological Photographic Association. At their meetings subjects of professional interest to the members and to the medical profession are discussed and each society has an official publication. The British Medical Association has recently begun publication of "Medical and Biological Illustration," a quarterly dealing with the art of photography and hand drawn illustrations.

Dr. Howard A. Kelly, who induced Max Brödel to come to Johns Hopkins University from Germany in 1894, had the keenest appreciation of the value of medical illustration. He said:[4] "The changes in the appearance of an organ brought about by disease are often manifested in such delicate deviations from the normal topography that it requires the hand of a genuine artist, and one who is also a well informed anatomist and careful pathologist, to represent the morbid condition accurately. The sense of vision, when unaided, often fails to grasp the significance with completeness, and in such a case the true artist will palpate the fresh specimen and represent the combined results of sight and touch. The superficial structure alone is frequently insufficient to demonstrate the character of the specimen, and the artist must find means of exhibiting the surface relation in association with the interior. This can be done: (1) by inserting lines, (2) by cutting away portions of the surface and thus displaying the depth, (3) by magnifying the organ and drawing it as though transparent, and (4) by explanitory diagrams and cross-sections. From these considerations it is evident that an intelligent interpretation of a pathologic specimen or of an anatomic or clinical demonstration through the eye and hand of a trained scientific artist must be vastly superior as a means of instruction to the best photograph." (Figure 1.)

Cushing, the neurosurgeon, and Graves, the gynecologist, both influenced medical illustration in that they often illustrated their own articles and with considerable skill. R. Walter Mills, an internist in St. Louis for many years and a member of the faculty of medicine at Washington University until his death, was an excellent artist. His illustrations embellished the medical literature of the pre World War I period. He persuaded me to become interested in medical illustration and encouraged me to continue. Evarts A. Graham and the late William T. Coughlin both influenced and aided my career. One cannot mention medical illustration without thinking of Harry S. Crossen who in a long life of usefulness was author of two great gynecologic volumes. He was meticulous in his operative technic and he was meticulous to the last detail in his requirements for an illustration. The illustrator who worked with him received far more than he gave. It is because of the interest and cooperation of such men with the illustrator that medical illustration has been able to contribute so much to medical literature and education.

The doctor who utilizes the services of a trained medical illustrator today can do so with complete confidence in his ability. Not only is he a trained draughtsman with a knowledge of anatomy and pathology, but he is also capable and eager to help in other ways. He understands the intricacies of the photoengraving processes and their potentialities concerning the reproduction of illustrations. Thus he can prepare the illustrations to meet the requirements of both the author and of the publisher. This relieves the author of a monotonous responsibility and makes the preparation of an article less a task.

If the author will take the illustrator into his complete confidence and discuss with him freely all parts of the problem, if he will regard the illustrator as an expert in his own field with some knowledge of the author's, a great obstacle will have been surmounted toward the creation of illustrations worthy of an excellent article. The author can further this relationship if he will frankly give credit for any merit the illustrations may have contributed to his article, for often the illustrations are the real essence of it. Indeed, some doctors are now working with the illustrator as coauthor.[5]

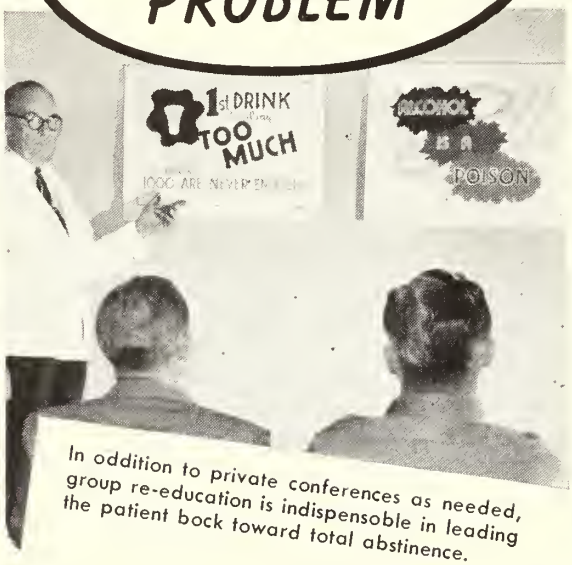
The illustrator has a responsibility toward the author. He must remember that he is the particular representative of his profession in his dealings with him. He must uphold the reputation of his profession by conducting himself with respect and courtesy toward a man of science and an expert. He must never question the author's opinion in his own specialty nor must he lack the patience to listen to any suggestions for carrying out the project. The author has the right to expect loyalty from the illustrator and to have his confidences respected. The illustrator may and should offer helpful suggestions concerning the technical aspects of the illustrations such as their number, their size and their arrangement. He should suggest the medium which he thinks is best suited for the preparation of illustrations for publication, with the requirements of the journal in which publication is desired in mind. Only through the complete cooperation of the representatives of these two related professions can the dissemination of knowledge so vital to the progress of medicine be furthered.

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The Treatment of
ALCOHOLISM..
A MEDICAL
PROBLEM



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PRESIDENT'S PAGE

The first important event in this election year will occur on Tuesday, August 5. On that day we shall have the opportunity to vote for candidates in the general primary election. Those nominated on that day may well be your public representatives for the next several years.



Contests for important national, state and city offices, among these a United States Senator, eleven United States Congressmen, the Governor of our state, state senators and representatives, will be decided on August 5.

Information on the views of the various candidates for the office of United States Senator appear in this issue of The Journal on page 699.

The importance of this day cannot be overemphasized. We have the chance to make our selections for the various offices. Remember, this is one of the few places in the world where all persons may vote as they choose. May the best men in both parties win.

J. William Thompson Jr.

Editorials

REMEMBER AUGUST 5

Remember that on August 5 you have the privilege, and the obligation, of performing one of the rights of the American citizen. The primary election can be of great importance and a physician is a citizen first, then a physician.

THE SELF EMPLOYED AND PENSIONS

Revised Keogh-Reed bills were introduced in the House of Representatives on June 27. The revised bills, H. R. 8390 and H. R. 8391, include all the amendments which the American Medical Association urged for the former bills, H. R. 4371 and H. R. 4373. Missouri Representatives in Congress have been urged to encourage the passage of these bills.

Background of the former and present bills is the Social Security Act which began seventeen years ago. It provided for a program of noncontributory old age pensions for persons in need, a mandatory federal system of old age pensions for most employed persons to provide retirement pensions for such employed persons. Both prior to the enactment of the Social Security Act and subsequent to it, many employers had set up private retirement plans for their employees, either voluntarily or as a result of union negotiations. These plans are keyed in with Social Security and the Congress has encouraged these private pension plans by giving them preferential tax treatment by the employer's contribution to the cost of employee pensions being deductible when made, the income earned by a pension trust which accumulates and invests the funds not currently taxed, and employee participants only paying tax on the benefits purchased through employer contributions when they begin receiving payments at retirement.

Such legislation benefits only those persons who occupy the status of an employee, which in many thousands of cases includes an officer-employee or a stockholder-employee or persons in position to build up a substantial amount to supplement their Social Security benefits.

Social Security now covers the majority of self-employed persons who wish to be covered, but there has been no provision for the building up of private pension plans by the self employed and receiving the same preferential tax treatment that is given the employer for doing this for the employee. This group, of course, has included the doctors, but it has also included the lawyer, the farmer, the store owner and many professional persons.

The present legislation provides for the same right of tax deferment on a portion of income set aside for retirement purposes as is given employed persons under Section 165 of the Social Security Act. The original bills, however, had several provisions which would still be discriminatory to many persons, among this group, the physician.

One change in the new bills is the deletion of the provision that only one method could be used to exclude amounts to be invested, that was, through a trust fund established by "a bona fide agricultural, labor, business, industrial, or professional association or similar organization for the exclusive benefit of its participating members." The new draft provides the eligible taxpayer with the option of purchasing a retirement annuity contract from an insurance company provided the insurance contract provides the same restrictions as the restricted retirement fund.

Another change in the new bills is the amounts excludable annually, which originally had been set as $7,500 or 10 per cent of income. The new bill places an overall lifetime limitation on an excludable amount of $150,000 and allows taxpayers now more than 55 years of age to exclude more than 10 per cent in the period 1953 to 1972.

As is provided in Section 165 of the Social Security Act, a capital gains tax is provided in the present bills, the option of taking the benefits in a lump sum and paying a capital gains tax.

Further provisions of the bills are to exclude, not any employed person, but any employed person who is covered by any kind of a pension plan. To provide for the fluctuations of income, a carry-over of unused exclusions for a period not more than five years is included. The bills provide that withdrawal from the savings funds is restricted until the taxpayer reaches the age of 65, except in the event of permanent and total disability continuing for a period of more than three months.

Hon. Eugene J. Keogh, in presenting the revised bills to the House of Representatives concluded by saying "The heart of this new social theory is that pensions are good and that the federal government should encourage them."

Organization and Economics

NEWS NOTES

James R. Amos, M.D., Springfield, has been named by Governor Smith as the Director of the Missouri State Division of Health to fill the vacancy caused by the death of the late Buford G. Hamilton, M.D. Dr. Amos has been director of the Greene County Health Department since 1941.

The following program for 1952 has been arranged by the General Practitioners Study Club of Greater St. Louis: Roy V. Boedeker, M.D., St. Louis, will speak on "Management of Abortion" on September 17; Robert W. Bartlett, M.D., St. Louis, will speak on "The Differential Diagnosis and Treatment of Cancer of the Colon and Rectum" on October 15; M. J. Lonsway, M.D., St. Louis, will speak on "Newer Concepts in Pediatrics of Interest to the General Practitioner" on November 19, and Garold V. Stryker, M.D., St. Louis, will discuss "A Résumé of Common Skin Diseases" on December 17.

J. Albert Key, M.D., St. Louis, will speak on "Traumatic Injuries" at a meeting of the Southwestern Surgical Congress at Dallas, Texas, October 20 to 22. J. W. Thompson, M.D., St. Louis, is vice president of the Congress.

Joseph S. Lawrence, M.D., Washington, D. C., will retire as director of the Washington office of the American Medical Association on September 1 and will be succeeded by Frank E. Wilson, M.D., who has been deputy director. Dr. Lawrence has served as director since 1944.

"Cheers for Chubby," the Metropolitan Life Insurance Company weight reduction education film which was approved by the Missouri State Medical Association, was shown in 40 per cent of motion picture theaters in Missouri.

MUSINGS OF THE FIELD SECRETARY

The Journal of the Cape Girardeau County Medical Society has been launched successfully. It took its maiden voyage into the sea of medical journalistic endeavor in April 1952. This brings to seven the number of county medical society bulletins in Missouri published regularly by component societies of the Missouri State Medical Association. These publications are: *The Bulletin of the St. Louis Medical Society, Jackson County Medical Society Weekly Bulletin, Greene County Medical Society Bulletin, St. Louis County Medical Society Bulletin, Bulletin of the Buchanan County Medical Society, Tri-State Medical Bulletin* (published by the Jasper County Medical Society) and the new publication of the Cape Girardeau County Medical Society.

Most will agree without question that the local society bulletin serves a distinct and unique function. In the first place they are, for the greater part, local in interest and scope, thereby furnishing an effective means of strengthening the bonds of common interest among physicians. They are also in position to interpret to their readers the local and regional aspects of state and national policies affecting the practice of medicine and health in general. Scientific articles, particularly desired by local groups, can be published as seen fit.

Suffice it to say that separate and distinct functions are served by local, state and national medical journals. In the meantime, it is appropriate to offer congratulations to these seven county societies and, particularly, to their editors and staffs, for these publications which exemplify another valuable contribution to medical organization.

NEW MEMBERS

Brereton, Robert L., M.D., St. Louis.
Bruce, Leo A., M.D., Sikeston.
Chieffi, Margaret, M.D., St. Louis.
Galeno, William A., M.D., St. Louis.
Green, Jess D., Jr., M.D., Raytown.
Huck, Richard F., Jr., M.D., St. Louis.
Knight, Franklin P., M.D., St. Louis.
Moyer, Carl A., M.D., St. Louis.
Robinson, William J., M.D., Kansas City.
Schaper, Ernest H., M.D., St. Louis.
Smith, Kathleen, M.D., St. Louis.
Snyderman, Sanford C., M.D., St. Louis.
Tamblyn, Claire L., M.D., Kansas City.
White, Robert E., M.D., St. Louis.
Yore, Richard W., M.D., St. Louis.

DEATHS

Patterson, Henry H., M.D., Braymer, a graduate of Ensworth Medical College, St. Joseph, 1904; honor member and former president of the Grand River County Medical Society; aged 82; died May 14.

PERNOUD, Flavius G., M.D., St. Louis, a graduate of Washington University School of Medicine, 1907; member of the St. Louis Medical Society, aged 67; died June 9.

Byrne, John I., M.D., St. Joseph, a graduate of the Central Medical College of St. Joseph, 1900; member of the Buchanan County Medical Society; aged 76; died June 20.

Owen, William C., M.D. St. Louis, a graduate of the

Missouri Medical College, 1889; honor member of the St. Louis Medical Society; aged 87; died July 1.

Abel, Oliver, Jr., M.D., St. Louis, a graduate of Washington University School of Medicine; member of the St. Louis Medical Society; aged 52; died July 2.

STATEMENTS OF CANDIDATES FOR THE OFFICE OF U. S. SENATOR FROM THE STATE OF MISSOURI

All candidates for the office of U. S. Senator from the State of Missouri were invited to present their views on "socialized medicine" for publication in THE JOURNAL.

Statement of Senator James P. Kem, Kansas City, Republican Candidate for U. S. Senator

I have had the pleasure of talking informally with more than a hundred individual physicians from all parts of the state in connection with my candidacy for reelection to the United States Senate. It was a pleasant but, in one respect, a somewhat disappointing experience. A surprising number of the doctors I talked with seemed ready to relax about things in Washington. They had the idea that since the Administration's frontal attack is bogged down, the fight against socialized medicine is over.

The fight is far from over. We cannot drop our guard at this time. When I returned to Washington, I asked a member of my staff to check on the status of current legislation. We found that more than a hundred bills closely related to socialized medicine are presently pending before the Senate and House. These bills cover a variety of subjects but they all have one thing in common—each would project the Federal Government farther into the medical field and, generally, into areas in which, if a governmental agency should intervene, the states or local communities should do it. In drawing up the more important of these bills, the sponsors cleverly wave the flag. The introduction to these bills explain that the particular legislation is needed "for the duration of the emergency," or "to protect the national security" or to relieve conditions in "national defense areas."

I recognize that the Federal Government has certain responsibilities for the welfare of the people. It is the socialistic pattern of so many of these bills to which I object. I shall continue to object to those that will undermine the free practice of medicine as a learned and honorable profession.

I am grateful for the many expressions of appreciation I have received from members of the medical profession for my constant opposition to legislation which would place the free practice of medicine in jeopardy. I shall continue my efforts along this line. I know in my heart that this is no time to relax. "Eternal vigilance is the price of liberty."

Statement of Stuart Symington, St. Louis, Democratic Candidate for U. S. Senator

In a speech delivered in St. Louis, June 4, 1952, before the International Association of Machinists, Mr. Symington made the following statement:

I am opposed to the regimentation of the medical profession through socialized medicine. I have a high regard for the personal and professional scientific contributions made by the doctors of America over the years. I believe in the extension of voluntary plans which will enable the American people to obtain adequate medical care at reasonable prices and I believe these objectives can be obtained without subjecting ourselves to socialized medicine.

Statement of John A. Johnson, Ellington, Democratic Candidate for U. S. Senator

In a letter to the Executive Secretary, dated June 9, 1952, Mr. Johnson made the following statement:

I am indeed glad to inform you that I am opposed to Compulsory Health Insurance in any form regardless of name or plan.

Statement of J. E. Taylor, Chillicothe, Democratic Candidate for U. S. Senator

One of the most vital needs of our people, and a field where progress has been woefully slow, is that of adequate medical and hospital facilities for all of us.

I do not believe in socialized medicine as the term is generally accepted or in any form of compulsory health insurance which could but lead to socialized medicine.

I do believe, however, that the health of the nation is a direct concern and obligation of government. I believe that the federal government should render every possible financial assistance to our states and cities in the construction, equipping and operation of a sufficient number of hospitals throughout this country to serve our entire population, regardless of location. There can be no question but that a hospital shortage exists today.

Neither may it be disputed but that we need and must have more doctors, dentists and nurses. It is even difficult at this time to supply the requirements of the armed forces and, in the event of an emergency such as total war, the American people would be destitute of medical attention. For these reasons I favor federal aid for medical schools and for nurses' training programs. Only in this way can we ultimately ease the present acute shortage and insure a future medical staff capable of coping with any emergency.

Medical and health insurance to reach all of the people also is to be devoutly desired. In this connection it is my hope that private insurance companies will in due time take care of this problem. Year by year the number of our people covered by health insurance is increasing tremendously. It is a program, however, which should be encouraged by government in all ways.

Finally, it is my thought that the solution to all our medical and health problems lies properly and can and will be found within the framework of our medical profession and our insurance industry. They constitute a challenge to their initiative, their enterprise and their genius, and I am confident they will not fail to live up to their responsibilities.

In the development of such a voluntary program, federal aid should be granted where private capital is insufficient. The latter should supplement and encourage the former toward the attainment of the goal toward which we all strive—a strong and healthy America.

URINARY TRACT

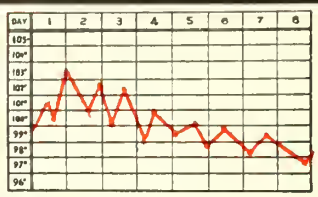
Pyelonephritis

1 Pyelonephritis occurs most often in the young child . . .

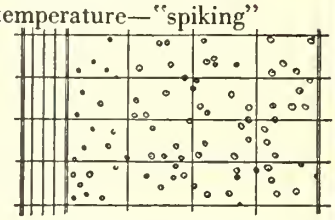


commonest in the "diaper-age" female

2 The onset is sudden, usually with a chill . . .



. . . temperature—"spiking"



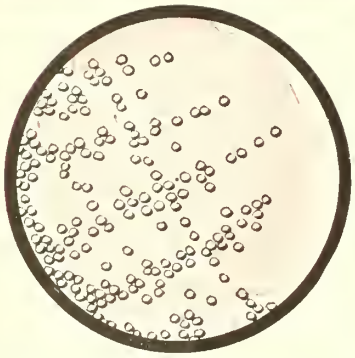
. . . white cell count—high

3 Always, pus cells and bacte pear in the urine



look for *clumps* of white cel in *catheterized* specimens

4 Culture determines pathogen. Mixed infection not uncommon.



in 8 out of 10 children, colon bacillus invades

5 Sometimes there is tenderness over the kidney region . . .



try the McKnight punch, or



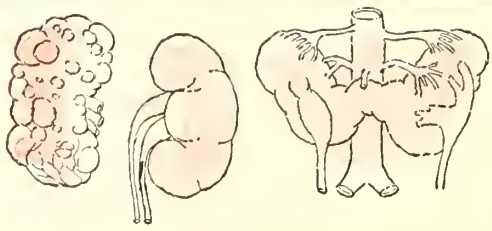
palpation in C-V an

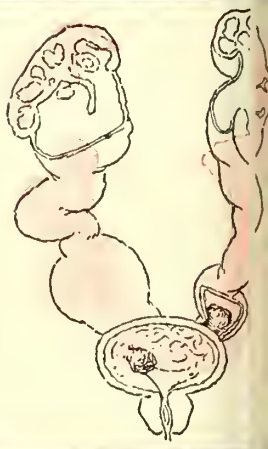
6 . . . or abdominal pain and rigidity



suggestive of an acute abdomen

7 Look for a cause of urinary stasis.





in children, 75% have congenital malformation . . . others may have calculus, foreign body, neoplasm, ureteral spasm.

CRYSTALLINE

Terramycin

Many urinary tract infections
as well as other infections
rapidly respond to therapy
with this well-tolerated
broad-spectrum antibiotic

Available in a wide variety of convenient dosage forms.

Pfizer

world's largest producer of antibiotics

ANTIBIOTIC DIVISION, CHAS. PFIZER & CO., INC., BROOKLYN 6, N. Y.

THE COUNCIL

The Council met at the Sheraton Hotel, St. Louis, June 21, 22, 1952, with Victor B. Buhler, M.D., Kansas City, Chairman, presiding.

Those present were Drs. Buhler, Donald M. Dowell, Chillicothe; W. F. Francka, Hannibal; R. O. Muether, St. Louis; John O'Connell, Overland; J. Loren Washburn, Versailles; R. W. Kennedy, Marshall; W. S. Sewell, Springfield; J. H. Summers, Lebanon; Frank W. Hall, Cape Girardeau; J. W. Thompson, St. Louis; E. C. Bohrer, West Plains; C. E. Hyndman, St. Louis; R. E. Schlueter, St. Louis; James R. McVay, Kansas City; Howard B. Goodrich, Hannibal; Henry Allen, St. Louis; E. A. Belden, Jefferson City; C. Souter Smith, Springfield; Robert D. Mattis, St. Louis; Victor E. Scherman, St. Louis; D. B. Landau, Hannibal; Curtis H. Lohr, St. Louis; James R. Amos, Jefferson City; Messrs. John Noble and Lawrence Bradley, Kennett; Lemoine Skinner and John G. Miller, St. Louis; W. H. Bartleson, Kansas City; Ray McIntyre and T. R. O'Brien, St. Louis.

World Medical Association

Mr. O'Brien read a communication from the World Medical Association asking that a member appear on an Annual Session program, that the Association become a supporting member, that it be endorsed and that information appear in the Journal. After discussion, upon motion of Dr. Kennedy, it was voted to endorse the World Medical Association and to find out what a supporting membership would cost with the view of becoming one.

Brucellosis Conference

A letter from the Minnesota Department of Health asking that a representative be sent to a Conference on Brucellosis involving fourteen states at St. Paul on July 7, 8, 9. After discussion, upon motion of Dr. Francka, it was voted to thank them for the invitation and offer cooperation but not to send a representative.

Deductions From Income Tax

The following letter in reply to a letter previously presented to the Council on deductions from Income Tax was read:

"Reference is made to your letter dated March 10, 1952 in which you request rulings with respect to the deductibility by doctors, for Federal income tax purposes, of the following items: (1) expenses for entertaining other physicians by whom patients are referred; (2) contributions made to funds raised for the social activities of student hospital nurses; (3) contributions made to hospital interne funds; (4) expenses of Christmas or other anniversary presents sent to patients or to other physicians; and (5) cost of floral offerings and kindred items sent to patients or to other physicians.

"Section 23 (a) (1) of the Internal Revenue Code provides that in computing net income there shall be allowed as deductions all the ordinary and necessary expenses paid or incurred during the taxable year in carrying on any trade or business.

"Section 24 (a) (1) of the Code provides that in computing net income no deduction shall in any case be allowed in respect of personal, family, or living expenses, except extraordinary medical expenses deductible under section 23 (x).

"Ordinarly, gifts to individuals constitute personal expenses, the deduction of which is prohibited by section 24 (a) (1) of the Code. Whether or not amounts expended by a doctor for gifts and floral offerings to his patients, other doctors and/or members or their families and for entertaining any such persons constitute ordinary and necessary business expenses for Federal income tax purposes must necessarily depend upon the facts in each particular case. Since a large personal element is generally present in such matters, substantial evidence is a prerequisite to the allowance of such amounts as deductible business expenses.

"If it can be shown that a business benefit commensurate with the amount of the payments results from such gifts and entertainment, the amount thereof might constitute an allowable deduction as a business expense.

"Whether or not contributions made to funds raised for the social activities of student hospital nurses and to hospital interne funds, are deductible as a business expense under section 23 (a) of the Code depends upon whether, in the practice of his medical profession, a doctor is expected by custom to make such payments and whether the amounts thereof are commensurate with the services rendered for which they represent compensation."

Accident and Sickness Insurance

It was pointed out that a clause is contained in the Association agreement relative to the accident and sickness insurance policy of the Metropolitan Life Insurance Company which allows a new member of a county society to obtain such insurance without medical examination provided he applies within a period of forty days after being accepted as a member.

"Cheers for Chubby"

A letter from the Metropolitan Life Insurance Company was read thanking the Association for its help in promoting the film on diet, "Cheers for Chubby," and reporting that it had been shown in 40 per cent of theaters in Missouri.

Treasurer's Report

Dr. Hyndman reported on the finances of the Association and gave figures showing that a small profit had been made on the Annual Session.

Field Secretary's Report

Mr. McIntyre reported that physicians, during the last two months, and by July 1, will have located in Nevada, Winfield, Princeton, Appleton City, Ava, Miller, Rockport, Perryville, Bourbon, Lebanon, Hermitage, West Plains, Steelville, Salem and Joplin. He reported that the following hospitals were under construction, additions being made, or plans for them completed: Audrain County Hospital, Mexico; Fitzgibbon Hospital, Marshall; a hospital at Windsor; Lincoln County Hospital, Troy; Chillicothe and Milan. He reported that Councilor Districts 10, 9, 4, 2 and 5 have had meetings this spring and 6 will have one soon; that twenty-one scientific speakers had been furnished since the Annual Session. He said that space had been reserved for the Missouri State Fair in August for an exhibit and that the AMA exhibit "Testing the Drunken Driver" will be used.

Audrain County Hospital Suit

Mr. Bradley reported that a hearing was held on June 4 before the Appelate Court in St. Louis and that a decision might be expected within two or three months.

Reed-Keough Bill

After discussion the following resolution was presented and adopted:

Whereas, The Congress has encouraged the deveolpment of private retirement plans, both prior and subsequent to the enactment of the Social Security Act, and

Whereas, Sections 165 and 23 (p) of the Internal Revenue Code provide preferential tax treatment for employees in that employer contributions to the cost of employee pension plans are deductible items when made and employee participants only pay tax on the benefits purchased through employer contributions when they begin receiving payments at retirement, and

Whereas, Such legislation does not apply to self employed persons such as farmers, lawyers, dentists, physicians or other professional men and women, and

Whereas, Even though these groups are not under Social Security at their own request, they still are in the "forgotten man" category so far as supplemental pensions are concerned because they do not have the right of tax deferment on a portion of their income set aside for retirement purposes as is given employed persons under Section 165 of the Internal Revenue Code, and

Whereas, HR 4371 and HR 4373, presently being considered by the House Committee on Ways and Means, provide reasonable methods whereby the self employed and professional groups may have an opportunity to secure supplemental retirement benefits on the same basis as employed groups, now, therefore be it

Resolved, That the Missouri State Medical Association favors the enactment of HR 4371 and HR 4373 with appropriate amendments as suggested by the American Medical Association at the Committee hearings and that a copy of this resolution be sent to all members of the House of Representatives and Senate of the United States from the State of Missouri.

Dr. McVay

Dr. Buhler announced that Dr. James R. McVay, Kansas City, had been elected to the Board of Trustees of the American Medical Association and Dr. McVay spoke to the Council and reported on the recent American Medical Association session. This was discussed by several present who had attended the session.

Trachoma in Missouri

Dr. C. Souter Smith, Chairman of the Committee on Conservation of Eyesight, reviewed the problem that had been referred to the Committee by the Council on the many diagnoses of trachoma being made through the Trachoma Hospital at Rolla and asked that Dr. Belden present two reports that had been made to the Division of Health. Dr. Belden presented reports of surveys by Drs. Alson E. Braley, Iowa City, and Phillips Thygeson, San Jose, California. The reports, while showing a few cases of trachoma, did not substantiate it being a problem in Missouri. After discussion in which it was brought out that the Division of Health was handling the problem adequately, on motion of Dr. Sewell, The Committee was commended for its work and Dr. Belden and the Division of Health for their efficient conduct of it and the Committee was asked to keep in touch with Dr. Belden on future developments in the question.

Woman's Auxiliary

Mrs. R. A. Sutter, University City, President of the State Auxiliary, reported to the Council on the work of the Woman's Auxiliary and offered their efforts in any work of the Association. Mrs. Sutter was commended on the work of the Auxiliary and in discussion the difficulty of publishing and distributing the Bulletin was brought out. On motion of Dr. O'Connell, it was voted to furnish addressograph plates for the mailing of the Bulletin. It was felt that the Woman's Auxiliary should have a headquarters office and Mr. O'Brien was asked to study such a possibility.

HR 7800

HR 7800, which included a section which would place the handling of total and permanent disability under the Social Security Administration was discussed and Mr. O'Brien said that word had just been received that the Senate Finance Committee had deleted the Section 3 which had been objectionable, and said that he would keep the Council informed.

1952 Annual Session

Mr. O'Brien presented a report from the National Exhibitors' Association which expressed the satisfaction of exhibitors at the 1952 Annual Session.

Amendment No. 2

The following letter from the Missouri State Teachers Association was read by Mr. O'Brien:

"This is merely to direct your attention to Amendment No. 2 that will be voted on at the general election on November 4, 1952. The Amendment is an enabling provision increasing the bonding capacity of school districts from 5 per cent to 10 per cent of the assessed valuation. The indebtedness must still be approved by a two-thirds vote, as at present. The Amendment would bring school districts in line with cities and counties in this respect. It was placed on the ballot by an almost unanimous vote of the General Assembly.

"Enclosed is material showing the need of school districts for increased bonding capacity and practices in other states relating to bonded indebtedness.

"A list of state-wide organizations endorsing Amendment No. 2 is being prepared. We would be glad to learn of any action taken by your organization in this respect.

"If additional copies of the enclosed material or other information would be helpful, kindly let us know."

After discussion, on motion of Dr. Muether, the Council voted to endorse Amendment No. 2.

Legislation

Mr. O'Brien spoke briefly of legislation that is likely to be presented during the next session of the legislature and said that he would keep members informed and asked their assistance in things that may develop.

Advisory Committee to S.S.S.

Dr. Henry Allen, St. Louis, newly appointed Missouri Chairman of the Advisory Committee to the Selective Service System, reviewed the work briefly and asked that Councilors cooperate with him. He asked that he be contacted at any time at 404 Missouri Theatre Bldg., 634 N. Grand Avenue, St. Louis; telephone, FRanklin 0265.

White House Conference

Dr. D. B. Landau, Hannibal, Chairman of the Committee on Infant Care, reported on the Advisory Child Welfare Council to the Missouri Association for Social Welfare which is planning to carry out recommendations of the 1950 White House Conference. He recommended that the Association not become a member as such but that it be recommended that county societies become members as units. On motion of Dr. Muether, it was voted to accept this recommendation. It was suggested that the Woman's Auxiliary join as groups.

The Journal

Dr. Thompson reported for the committee appointed to study The Journal administration and editing and, stating that it was a progress report, recommended that the Associate Editor, Dr. Vincent T. Williams, become editor at the beginning of the next volume of The Journal, January 1, 1953. He said that further recommendations would be made at a future meeting of the Council. On motion of Dr. Francka, this recommended was accepted.

AMA Education Foundation

Mr. O'Brien reported that in 1951 only twelve physicians from Missouri had contributed to the AMA Education Foundation and that only one had done so in 1952. It was pointed out that many contributions went directly to schools but that now these can go through the Foundation for the specific schools. On motion of Dr. Muether, the President was asked to appoint a committee to implement the drive for funds for the Foundation.

AMA Dues

Mr. O'Brien gave each Councilor a list of members by district who were delinquent in AMA dues. After discussion on motion of Dr. Dowell, it was decided that a follow-up letter should be sent from the Association office and on September 1, Councilors and county societies be notified of delinquent members and their assistance be asked.

1951 Assessment

Lists of members who did not pay the 1951 Association Assessment were given to Councilors. After discussion, on motion of Dr. Muether, it was voted that the Association office implement a letter from the county society to each member pointing out that constitutionally, the member would have to be dropped from membership.

Indigent Care Survey

A letter from the Missouri Health Council Secretary stating that the amount necessary for the survey of the medically indigent of the state had been determined and the amounts that each organization should furnish allocated. The amount for the Association was $2,500.00. After discussion, on motion of Dr. Muether, the following committee was appointed to discuss the survey, present timeliness and the allocations with the Missouri Health Council and be empowered to take appropriate action: President, President-elect and the Treasurer.

Home Care of Veterans

Dr. Curtis H. Lohr, St. Louis, chairman of the special committee on care of the veteran, reported that the Veterans Administration wished to renew the contract which was enacted following World War II for the care of veterans in their own communities. On motion of Dr. Francka, it was voted to renew the contract.

Examination for Cancer

Material promoting the examination for cancer which had been received from the Connecticut Medical Association was presented and on motion of Dr. Francka, it was referred to the Committee on Cancer for study.

Employee Insurance

On motion of Dr. Bohrer, the following committee was appointed to study appropriate insurance or protection for employees of the Association who had been with the Association five years or longer: Drs. Bohrer, Buhler and Hyndman.

Patient Care

The following action of the Missouri Conference for Improvement of Patient Care was approved: "That the Conference circularize state and federal candidates stating that the group favors full credit for all bills for medical, nursing and hospital expenses and premiums for health insurance on the basis that such insurance is semi-catastrophic and should be considered for full tax deduction purposes."

Public Relations

Mr. Skinner reported briefly on public relations work with the Association. He reported that the idea of the handbook for office secretaries which the Association had considered had been taken over by the American Medical Association.

AMA Plaques

Attention was called to the plaques for physician's offices which the public relations department of the AMA had provided and Mr. McIntyre was asked to purchase twenty-five so that he could furnish them to physicians wishing them.

Reports of Councilors

Councilors reported for their districts.

Next Meeting

Dr. Hall invited the Council to meet in Cape Girardeau on October 4 and 5 and the invitation was accepted.

COUNCILOR DISTRICT NEWS

FIRST COUNCILOR DISTRICT

DONALD M. DOWELL, CHILLICOTHE, COUNCILOR

Grand River Medical Society

A dinner meeting of the Grand River Medical Society was held at the Strand Hotel, Chillicothe, June 19.

"Taxes and the Medical Profession" was interestingly and practically discussed by Mr. Charles G. Young, Jr., vice president and trust officer of the City National Bank and Trust Co., Kansas City.

"Is State Medicine Dead" was the subject well presented by A. S. Bristow, M.D., Princeton.

Donald M. Dowell, M.D., Chillicothe, Councilor, discussed the results of a fee schedule questionnaire which had been sent to the society's membership.

The Woman's Auxiliary met with the doctors for dinner and then held a separate meeting.

In the afternoon a golf tournament was held at the Country Club in Chillicothe. L. R. Lee, M.D., Bethany, won top honors and was presented the winner's trophy at the evening meeting.

DONALD M. DOWELL, M.D., Councilor

FIFTH COUNCILOR DISTRICT

J. LOREN WASHBURN, VERSAILLES, COUNCILOR

On June 18 the Fifth Councilor District met at the Frederick Hotel, Boonville, for an evening of entertainment and scientific discussion. The occasion began with a social hour, followed by dinner and the formal program. Thirty-five physicians were present.

J. William Thompson, M.D., St. Louis, President, Missouri State Medical Association, discussed "Our Relationships with Blue Cross and Blue Shield" and R. O. Muether, M.D., St. Louis, spoke on "Liver Disease" with special emphasis on hepatitis.

The wives of the physicians held a separate dinner meeting at Holt's Cafe after joining with the doctors for the social hour festivities. Mrs. Richard A. Sutter, University City, President of the Woman's Auxiliary to the Missouri State Medical Association, Mrs. Norton J. Eversoll, St. Louis, First Vice President, and Mrs. C. Alex McBurney, Slater, President-elect, were guest of the Auxiliary.

The Cooper County Medical Society and its Auxiliary were gracious host and hostess.

J. LOREN WASHBURN, M.D., Councilor

SIXTH COUNCILOR DISTRICT

R. W. KENNEDY, MARSHALL, COUNCILOR

Science swelters on was exhibited by the dinner meeting of the Sixth Councilor District at the Inn Hotel, Butler, on June 26. Even the social hour with its refreshing atmosphere failed to lower the temperature. Twenty-five physicians, however, were present.

J. William Thompson, M.D., St. Louis, President of the Association, was present to discuss Blue Cross, Blue Shield and various other important matters confronting the profession.

The Cardiovascular Section of St. Louis University School of Medicine presented a scientific program in the form of a panel discussion on "Recent Advances in the Management of Various Heart Diseases" with E. Lee Schrader, M.D., St. Louis, moderator. Participating in the panel were James G. Janney, M.D.; Chester Lynxwiler, M.D., and John Inkley, M.D., St. Louis.

Sincere appreciation for their hospitality was extended by those present to the Bates County Medical Society.

R. W. KENNEDY, M.D., Councilor.

SEVENTH COUNCILOR DISTRICT

VICTOR B. BUHLER, KANSAS CITY, COUNCILOR

Claude J. Hunt, M.D., Kansas City, was installed as president of the American Goiter Association at the annual session held in Chicago in May.

G. Wilse Robinson, Jr., M.D., Kansas City, was reelected president of the National Association of Private Psychiatric Hospitals at an annual meeting in Atlantic City in May. Paul Hines, M.D., Kansas City, was reelected secretary of the association.

Herbert L. Mantz, M.D., Kansas City, was a guest speaker at the annual meeting on June 5 of the Michigan Tuberculosis Association at Ann Arbor and spoke on "One World of Tuberculosis."

NINTH COUNCILOR DISTRICT

J. H. SUMMERS, LEBANON, COUNCILOR

South Central Counties Medical Society

The South Central Counties Medical Society met for dinner at the Arcade Hotel, West Plains, June 25, with the following members and visitors present: Drs. R. W. Denney and A. C. Ames, Mountain Grove; Garrett Hogg, Jr., Cabool; S. G. Kramer, Houston; M. B. Perkins, Willow Springs; E. C. Bohrer, Rollin H. Smith, C. F. Callihan and L. E. Toney, West Plains; C. W. Cooper, Thayer; A. T. Walker, Mammoth Springs, Ark., and T. E. Ferrell and R. D. Duncan, Springfield, and the wives of most of the doctors.

After dinner the women went to the home of Mrs. Callihan for the evening and the meeting was called to order by Dr. Kramer, the president-elect.

Dr. Ferrell spoke on "The Surgical Treatment of Diverticulitis and Its Complications" and Dr. Duncan spoke on "Herniation of the Intervertebral Disk."

A vote of thanks and appreciation was given the speakers.

It was voted that the next meeting would be a picnic on Spring River below Mammoth Springs in the afternoon and evening of July 24.

A. C. AMES, M.D., Secretary

TENTH COUNCILOR DISTRICT

FRANK W. HALL, CAPE GIRARDEAU, COUNCILOR

Butler County Medical Society

"The Present Day Concept of Neuropsychiatry" was discussed by E. H. Parsons, M.D., and George Lawrence, M.D., St. Louis, at a meeting of the Butler County Medical Society at the Hickory House, Poplar Bluff, on June 12.

FRANK W. HALL, M.D., Councilor

CORRESPONDENCE

JOHN ZAHORSKY, M.D.
STEELVILLE

Emeritus Professor of Pediatrics,
St. Louis University School of Medicine

To the Editor:

Medical Education

As already stated, medical schools at the beginning of this century were numerous and many of them imperfectly equipped and staffed with relatively poor teachers. The American Medical Association began a crusade against this inefficient medical education by grading them into A, B and C schools. Then the Carnegie Foundation for the Advancement of Teaching published a complete, impartial report; consequently, legislators everywhere began to enact laws to improve medical training. The number of medical schools slumped from 162 to 75 by 1930. In St. Louis, two schools united to form the Medical Department of Washington University and two others became the St. Louis University School of Medicine. The other half dozen schools gradually abandoned medical teaching. Schools in Kansas City also consolidated. Now only an osteopathic school is active there.

Nevertheless, the osteopathic school at Kirksville survived and graduated from fifteen to thirty students annually. One school was established in Kirksville, another in Kansas City. Now, the medical studies extend over four years and, as mentioned, include pharmacology. (The course is too short, I think.) The Kansas City school, two years ago, had about seventy-five entrants and the Kirksville school nearly a hundred.

Actuated by the American Medical Association the regular medical schools conformed to the requirements of that Association. The basic object was to educate and train learned and skilful physicians. Now at least three years premedical college work, four years in the medical school and one year internship are the minimum requirements. To become a specialist and obtain the degree of A.M. in medicine necessitates three more years work as a resident physician, or at least that much time spent in apprenticeship with a competent specialist. Is this scholastic career needlessly prolonged? I think not. The United States must have the highest educated and best trained physicians in the world. Our standards should not be lowered.

"Curious enough the modern standard is nearly a replica of the old mediaeval requirement that there should be three years of preliminary study at the university before taking up medicine, four years at medicine and then a year of practice with a physician before the medical neophyte might practice for himself." (Encyclopedia Americana).

Nevertheless, the curriculum can be so arranged that the general practitioner is unconsciously developed. It seems to me that the present curriculum succeeds in providing merely good interns for the hospitals. As all big hospitals are staffed by specialists, the student invariably becomes imbued with the advantages of specialism. No general practitioners are on the teaching staff. The increasing urban life seems to swallow all the practitioners. Shall the family doctor also become a specialist! The best training is for the practitioner in the rural districts to take a year or more apprenticeship with a substantial practitioner.

The important task of the rural doctor is to simplify his medical technic and practice a wholesome economy. The young man just out of a hospital wants to send so many patients to the hospital, yet this is not economical. Some of the most successful practitioners, with a well equipped office, send patients to a specialist or to a hospital only in select diseases. So often it is a gesture of despair, "I can do nothing for you, go to the hospital." On the other hand, when the patient needs a major operation, or a specialized instrumentation (as cystoscopy) he should be sent to a specialist. With increasing experience, the practitioner depends less and less on the services of a hospital. How to do this effectively is learned by an apprenticeship to a doctor in a rural community. Of course, with his superior basic training he should improve on the methods of his teacher, but simplicity and economy must always remain the guiding principle. The Ozark people are comfortable but not wealthy.

The sad truth stands staring us in the face—farm boys and young men from the towns do not enter a medical school. Some have gained the scholastic standard but the cost is exorbitant. It would bankrupt the family. In recent years only a young man living in a large city and having a rich uncle (or father) can become a doctor of medicine. The city boys have taken over the medical schools completely. Consult the catalogues of the medical schools, scan the names and addresses of the students and you will find no students from the Ozarks listed in the classes. O yes, I did find one from Higginsville. There were thirty-five students from St. Louis and one from Springfield. Will any of these graduates from the St. Louis area go to the Ozarks? Well, Crawford County is thankful for two of them, but both were suburbanites.

The Ozark Highlands will need at least a hundred practitioners in the next five years. Where will they come from, since the large cities absorb all the graduates? Even the osteopaths are no longer rushing to our aid. The cost of becoming an osteopath is prohibitive for the Ozark farm boy. Why can not the schools offer a free scholarship for a few Ozark boys? I know, however, the schools cannot finance the expense, but a few could be amalgamated with the classes. Then let this farm boy spend only six months in the hospital as an intern and six months or more with a reliable country practitioner!

Farming has always been a hazardous occupation and in recent years the increasing mechanization of farm operations has augmented the number of accidents. The farmer buys some new machine—buzz-saw, binder, hay-stacker, corn husker, and mower—and without training tries to operate the contraptions. While a kick from a horse was dreaded formerly, the horse's elimination by the tractor has greatly added to the traumatic accidents. Then there is the automobile!

The country doctor should be well trained in surgical emergencies. This is one prime qualification.

The mothers of the rural district continue to produce the most children, and need a young physician

This is the fourth of a series of letters to the Editor from Dr. Zahorsky. Others will be carried in future issues of The Journal.

ACCIDENT, HOSPITAL AND SICKNESS INSURANCE

For Physicians, Surgeons, Dentists Exclusively



$5,000 accidental death Quarterly $8.00 $25 weekly indemnity, accident and sickness	$15,000 accidental death Quarterly $24.00 $75 weekly indemnity, accident and sickness
$10,000 accidental death Quarterly $16.00 $50 weekly indemnity, accident and sickness	$20,000 accidental death Quarterly $32.00 $100 weekly indemnity, accident and sickness

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BOOK REVIEWS

Practical Clinical Psychiatry by Edward S. Strecker, A.B., A. M. Sc.D. Litt.D., LL.D., M.D., Professor of Psychiatry, School of Medicine, University of Pennsylvania, Franklin C. Ebaugh, A.B., M.D., Professor of Psychiatry, University of Colorado, School of Medicine, Director, Colorado Psychopathic Hospital and Jack R. Ewalt, M.D., Professor of Neuro-Psychiatry, Administrator of Hospitals, University of Texas Medical Branch, Galveston, Texas. Section on Psychopathologic Problems of Childhood by Leo Kanner, M.D., Associate Professor of Psychiatry, Johns Hopkins University School of Medicine. Seventh Edition. The Blakiston Company, Philadelphia, Pa. 1951. Price $7.00.

This is an amazing book—amazing in its completeness, its good sense and the ease and clarity of its language. That should be understood as well as the fact that any comments do not detract from the desirability of the book above others in the field.

In Chapter 1, the mention of the various lines of scientific study and the bibliography are assuredly too limited. Nolan Lewis' study of denemtia praecox is not even mentioned. There should be enough in this chapter to stimulate the investigative curiosity of the student.

In Chapter 2, the outlines for investigation of patients are too long and involved for any but research purposes. There probably should be several outlines, one for the psychiatric institution, one for the psychiatric patient in the general hospital or clinic and one for every medical examination. Many an operation or long course of medical treatments would be avoided if the patient were only asked about sleep, eating, moods and nervousness.

In the senile age period there should be a definite distinction between the degenerative group and the psychotic group. And in the presenile period there is also a group of cases apart from Alzheimer's and Pick's diseases.

Treatment of the various functional psychotic and neurotic states as given is woefully incomplete. There probably is a difference here in the methods of the institution and of private practice. There is now a real art in the way the practitioner deals with the many problems that come into his hands. Electric shock is certainly used in the schizophrenias and the neuroses. Besides there are the rest sedatives and tonic measures, advice to fit into business life, not to mention the regulation of that seat of psychologic stability, the home. Almost every patient is a subject of research in methods of improving his well-being and usefulness. Much of this art is acquired by experience but at least a hint of its methods should be given in books. L. B. A.

Bone and Joint Diseases. Pathology Correlated with Roentgenological and Clinical Features. J. Vernon Luck, M.S. (Ortho.), M.D., F.A.C.S., F.I.C.S., Assistant Clinical Professor of Orthopedic Surgery, University of Southern California. Senior Attending Physician, Department of Orthopedic Surgery, and Consultant in Orthopedic Pathology, Los Angeles County Hospital. Member, Subcommittee in Orthopedic Surgery, National Research Council. Member, Board of Associate Editors, Journal of Bone and Joint Surgery. Charles C Thomas, Publisher, Springfield, Illinois. 1950. Price $16.50.

This is an unusual book. It is the result of ten years of exhaustive study. Photographs, color plates and reproductions of x-rays are numerous and clear. Dr. Luck ably discusses pathology with elaborate detail. Some clinical entities and treatment, especially, are described briefly indeed. For instance, to the intervertebral disc a total of three or four pages has been allotted and treatment of this important condition is not discussed. To chronic osteomyelitis has been devoted thirty-five pages; an exhaustive study with much stress on pathogenesis and only three lines to treatment.

Even fractures are illustrated with photomicrographs and beautiful illustrations of x-rays but the total discussion of treatment is extremely brief. More than 150 pages, about one fourth of the book, is devoted to bone tumors, and this subject is handled in a masterful manner. The photomicrographs include carcinoma of the prostate, malignant cartilage, osteosarcoma, hemangiomas of skull, giant cell tumors of tibia, osteomas and others.

For the student of pathology the book is wonderful. For the average physician it is probably ultra-scientific.

D. T. M.

Obstetric Analgesia and Anesthesia, Their Effects Upon Labor and the Child, by Franklin F. Snyder, M.D., Associate Professor of Obstetrics and Associate Professor of Anatomy, Harvary Medical School. Illustrated. W. B. Saunders Company. Philadelphia and London. 1949. Price $6.50.

This book is well planned detailed exposition of all forms of obstetrics analgesia and anesthesia. Each chapter has an extensive bibliography at its end. By the use of an injection of extract of urine of pregnancy into animals, pregnancy was prolonged and fetuses at full turn could be directly observed within the uterus. In this way the effect of drugs on fetal respiratory movements could be observed directly.

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Intrauterine pneumonia and its relation to preventive rupture of the membranes is emphasized. The role of trauma, prematurity and analgesic drugs as factors causing asphyxia is discussed in detail.

Section II is devoted to "The Treatment of Pain During Labor." Each volatile and nonvolatile anesthetic is discussed from three points of view: (1) potency in pain relief, (2) effect upon the fetus and (3) effects upon the mother, especially the labor mechanism. R. B

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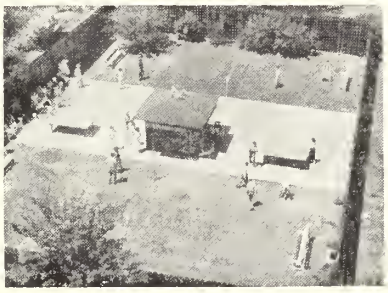
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Defense—Charles E. Hyndman, St. Louis, Chairman (1954); O. B. Zeinert, St. Louis (1955); L. P. Forgrave, St. Joseph (1955); Roland S. Kieffer, St. Louis (1953); James H. O'Neil, Kansas City (1953).

Public Policy and Public Relations—W. F. Francka, Hannibal, Chairman; J. W. Thompson, St. Louis; E. C. Bohrer, West Plains; J. W. Allee, Columbia; G. W. Winn, Boonville.

Medical Education and Hospitals—R. M. S. Barrett, St. Louis, Chairman (1953); Edwin C. Schmidtke, Columbia (1953); John S. Knight, Kansas City (1954); M. K. Underwood, Rolla (1955); W. J. Ferguson, Sikeston (1955).

Cancer—E. C. Ernst, St. Louis, Chairman (1953); Marvin Napper, Springfield (1955); Thomas Martin, St. Louis (1955); Everett Sugarbaker, Jefferson City (1954); E. Kip Robinson, Kansas City (1954). **Associate Members**—Jack E. Hill, Kansas City; Frederick J. McCoy, Kansas City.

Medical Economics—A. P. Rowlette, Moberly, Chairman (1955); Royce Bohrer, Jefferson City (1955); C. T. Herbert, Cape Girardeau (1954); Arthur B. Smith, Kansas City (1954); B. L. Sinner, St. Louis (1953).

Mental Health—E. F. Hoctor, Farmington, Chairman (1954); John M. Sartin, Springfield (1955); Thomas Thale, St. Louis (1955); Paul Hines, Kansas City (1953); Ernest H. Parsons, St. Louis (1953).

Maternal Welfare—Kenneth E. Cox, Kansas City, Chairman (1953); E. Lee Dorsett, St. Louis (1955); Leo J. Hartnett, St. Louis (1955); J. L. Johnston, Springfield (1954); E. E. Wadlow, St. Joseph (1953). **Associate Members**—G. L. Miller, Kansas City; William See, Columbia.

Infant Care—Daniel B. Landau, Hannibal, Chairman (1954); R. J. LaDriere, St. Louis (1955); Eugene J. Schwartz, Springfield (1955); George V. Herrman, Kansas City (1954); H. E. Petersen, St. Joseph (1953). **Associate Members**—J. S. Sennott, Jefferson City; Guy N. Magness, University City.

Health and Public Instruction—A. W. McAlester, III, Kansas City, Chairman (1953); J. Earl Smith, St. Louis (1955); Rolla B. Wray, Nevada (1954); George A. Kelling, Waverly (1954); Claude J. Hunt, Kansas City (1953).

Constitution and By-Laws—Durward G. Hall, Springfield, Chairman (1954); W. L. Allee, Eldon (1955); Paul Baldwin, Kennett (1955); Hubert M. Parker, Kansas City (1953); Curtis H. Lohr, St. Louis (1953).

Fractures—Daniel L. Yancey, Springfield, Chairman (1955); W. J. Stewart, Columbia (1954); N. S. Pickard, Kansas City (1954); W. R. Bohne, St. Louis (1953); Carl M. Fellhauer, St. Louis (1953). **Associate Members**—Jacob Kulowski, St. Joseph; B. L. Murphy, Hannibal; Richard H. Kiene, Kansas City; Thomas G. Otto, Cape Girardeau.

Conservation of Eyesight—C. Souter Smith, Springfield, Chairman (1955); Robert D. Mattis, St. Louis (1955); W. L. Post, Joplin (1954); A. N. Lemoine, Kansas City (1953); H. B. Stauffer, Jefferson City (1953). **Associate Members**—John McLeod, Kansas City; G. J. Tygett, Cape Girardeau; George Hornback, Hannibal; C. H. Brady, Sedalia; Theodore E. Sanders, St. Louis.

Control of Venereal Disease—A. W. Neilson, St. Louis, Chairman (1955); E. M. Cannon, St. Louis (1955); J. G. Siceluff, Springfield (1954); James C. Cofer, Kennett (1953); Charles C. Dennie, Kansas City (1953). **Associate Members**—R. J. Murphy, Kansas City; James C. Cope, Columbia.

Industrial Health—H. M. Roebber, Bonne Terre, Chairman (1954); Vencel W. Hollo, St. Louis (1955); F. L. Feierabend, Kansas City (1955); V. T. Williams, Kansas City (1954); E. M. Fessenden, Springfield (1953).

Diabetes—William H. Olmsted, St. Louis, Chairman (1955); Blaine Z. Hibbard, Kansas City (1955); Llewellyn Sale, St. Louis (1954); E. D. Baskett, Columbia (1954); Lucien W. Ide, St. Joseph (1953). **Associate Members**—Vincent J. LoPiccolo, St. Louis; A. W. Hanss, Springfield.

Anesthesiology—Carl K. Ness, St. Joseph, Chairman (1954); Joseph A. McNearney, Richmond Heights (1955); Merritt H. Kimball, Kansas City (1955); H. J. Freiheit, St. Louis (1953); O. B. Crawford, Springfield (1954).

Hospital and Professional Relations—Paul N. Johnstone, Kansas City, Chairman (1953); Hollis Allen, St. Louis (1955); C. G. Stauffacher, Sedalia (1955); Joseph L. Fisher, St. Joseph (1954); Stanley S. Peterson, Springfield (1954).

Special Committees

Physical Medicine—C. Stewart Gillmor, Kansas City, Chairman (1954); Sedgwick Mead, St. Louis (1955); R. A. Ritter, Cape Girardeau (1955); Emmet Settle, Rock Port (1953); Luke A. Knese, St. Louis (1953).

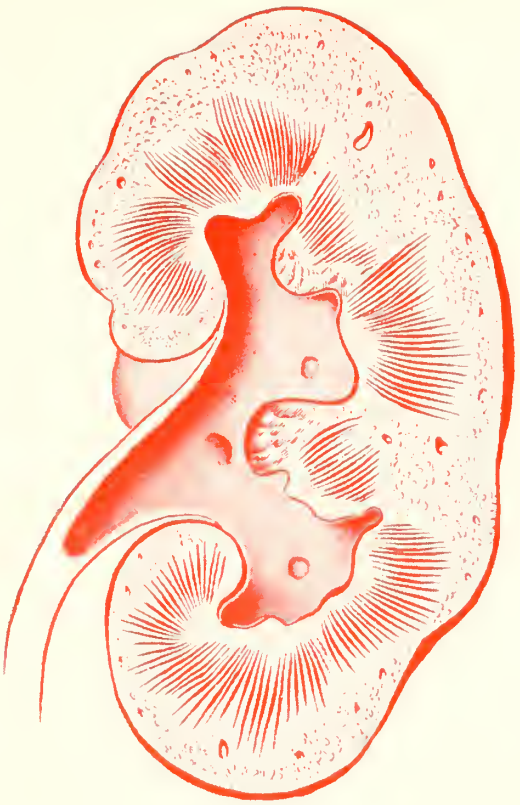
Tuberculosis—Paul Murphy, St. Louis, Chairman; I. J. Flance, St. Louis; E. E. Glenn, Springfield; Lawrence E. Wood, Kansas City; J. L. Mudd, St. Louis; C. A. Brashear, Mount Vernon; W. P. McDonald, St. Joseph; F. E. MacInnis, Kansas City; H. L. Greene, Hannibal.

Study of Cardiac Disease—E. Lee Shrader, St. Louis, Chairman (1953); H. W. Carle, St. Joseph (1955); V. Bryce Ballard, Kansas City (1955); Drew Luten, St. Louis (1954); A. M. Estes, Cape Girardeau (1954). **Associate Members**—E. J. McIntire, Carthage; Earl L. Loyd, Jefferson City.

Alcoholism—Ralph E. Duncan, Kansas City, Chairman; S. D. Smith, Columbia; Kenneth Coffelt, Springfield; Joseph B. Kendis, St. Louis; George W. Forman, St. Joseph.

Rural Medical Service—A. E. Spelman, Smithville, Chairman; R. W. Kennedy, Marshall; W. A. Broyles, Bethany; W. J. Shaw, Fayette; Martin M. Hart, Salem; A. S. Bristow, Princeton; Eugene Canty, St. Charles; Ray Johnson, Jr., Louisiana; C. C. Castles, Caruthersville.

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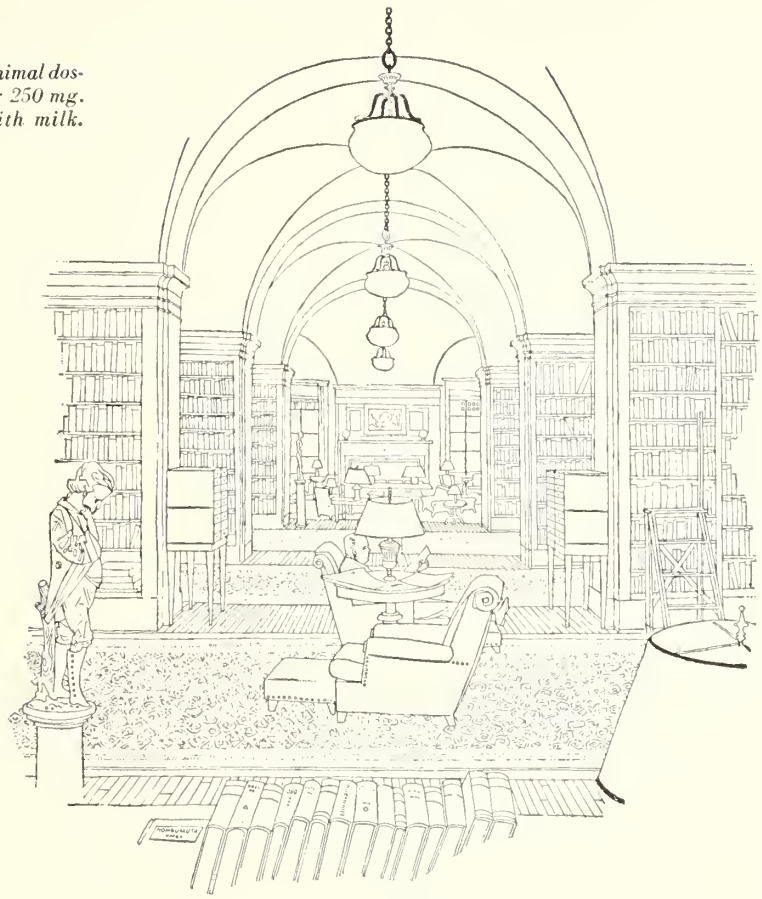
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County Societies in Affiliation with the Missouri State Medical Association

County	District	President	Address	Secretary	Address
Andrew	1	V. R. Wilson	Rosendale	M. L. Holliday	Fillmore
Audrain	5	Thomas L. Dwyer	Mexico	Harry F. O'Brien	Mexico
Barton-Dade	8	H. M. Arnold	Lamar	Lee A. McNeel, Jr.	Greenfield
Bates	6	D. C. Ronald	Butler	D. T. Hatcher, Jr.	Butler
Benton	6	T. S. Reser	Cole Camp	James A. Logan	Warsaw
Boone	5	O. F. Bradford	Columbia	Charles Lamke	Columbia
Buchanan	1	Claude Grant	St. Joseph	Allen I. Herman	St. Joseph
Butler	10	C. A. Post	Poplar Bluff	W. E. Henrickson	Poplar Bluff
Callaway	5	George F. Wood	Fulton	R. N. Crews	Fulton
Camden	5	E. G. Claiborne	Camdenton	G. T. Myers	Macks Creek
Cape Girardeau	10	John Harry Keim	Cape Girardeau	Harold D. Ridings	Cape Girardeau
Carter-Shannon	9	Harry Rollins	Winona		
Cass	6	H. B. Neis	Harrisonville	O. B. Barger	Harrisonville
Chariton-Macon-Monroe-Randolph	2	P. V. Dreyer	Huntsville	Clarence C. Cohrs	Moberly
Clay	1	Maurice Chastain	Smithville	S. R. McCracken	Excelsior Springs
Clinton	1	W. B. Spalding	Plattsburg	R. E. Wilbur	Cameron
Cole	5	J. G. Bruce	Jefferson City	Robert H. Tanner	Jefferson City
Cooper	5	Howard L. Wilcox	Boonville	J. C. Tincher	Boonville
Dallas-Hickory-Polk	8	Evelyn Griffin	Buffalo	George Robinson	Humansville
Dunklin	10	C. R. Peck	Kennett	E. L. Spence	Kennett
Franklin-Gasconade-Warren	4	R. J. Bozzo	Washington	F. G. Mays	Washington
Grand River Medical Society (Caldwell-Carroll-Livingston, Grundy-Daviess, Harrison, Linn, Mercer, De Kalb)	1	Wm. A. Fuson	Trenton	E. A. Duffy	Trenton
Greene	8	Wm. Paul Maddux	Springfield	Charles E. Lockhart	Springfield
Henry	6	Hugh B. Walker	Clinton	R. S. Hollingsworth	Clinton
Holt	1	F. E. Hogan	Mound City	D. C. Perry	Mound City
Howard	5	Joseph Gardner	Glasgow	Wm. J. Shaw, Jr.	Fayette
Jackson	7	Frederick B. Campbell	Kansas City	Williston P. Bunting	Kansas City
Jasper	8	W. T. McNew	Carthage	Katherine Kiehl	Joplin
Jefferson	4	Thomas A. Donnell	De Soto	J. F. Rutledge	Crystal City
Johnson	6	O. H. Damron	Warrensburg	T. Reed Maxson	Warrensburg
Laclede	9	J. H. Hope	Lebanon	G. E. Fisher	Lebanon
Lafayette-Ray	6	E. B. Nisbet	Odessa	M. C. Johnson	Richmond
Lewis-Clark-Scotland	2	J. R. Bridges	Kahoka	P. W. Jennings	Canton
Lincoln	4	H. S. Harris	Troy	J. C. Creech	Troy
Marion-Ralls	2	D. B. Landau	Hannibal	R. J. Lanning	Hannibal
Miller	5			Carl T. Buehler, Jr.	Eldon
Mineral Area County Medical Society (St. Francois-Iron-Madison-Washington-Reynolds-Ste. Genevieve)	10	F. R. Crouch	Farmington	S. A. Lanzefame	Farmington
Moniteau	5	J. P. Burke, Jr.	California	R. B. Fulks	California
Montgomery	5	E. J. T. Anderson	Montgomery City	S. J. Byland	Wellsville
Morgan	5	J. L. Washburn	Versailles	Ruth Kauffman	Versailles
Newton	8	L. E. Rolens	Granby	L. T. Taylor	Neosho
Nodaway-Atchison-Gentry-Worth	1	E. D. Imes	Maryville	Charles D. Humberd	Barnard
North Central Counties Medical Society (Adair-Schuyler-Knox-Sullivan-Putnam)	2	Val E. Miltenberger	Kirksville	John B. Jones	Kirksville
Ozarks Medical Society (Barry-Lawrence-Stone-Christian-Taney)	8	A. J. C. McCallum	Aurora	R. R. Donley	Monet
Pemiscot	10	C. F. Cain	Caruthersville	C. C. Castles	Caruthersville
Perry	10	O. A. Carron	Perryville	J. F. Lutkewitte	St. Marys
Pettis	6	J. E. Lamy	Sedalia	Carl D. Siegel	Sedalia
Phelps-Crawford-Dent-Pulaski	9	Guy V. Everist	Rolla	M. K. Underwood	Rolla
Pike	2	Charles H. Lewellen	Louisiana	Q. R. Johnson, Jr.	Louisiana
Platte	1	L. C. Calvert	Weston	D. M. Miller	Platte City
St. Charles	4	O. W. Towers	St. Charles	L. R. McIntire	St. Charles
St. Louis City	3	Jerome I. Simon	St. Louis	J. E. VonKaenel	St. Louis
St. Louis	4	Oscar P. Hampton, Jr.	University City	M. A. Diehr	St. Louis
Saline	6	Ralph Jones	Sweet Springs	Richard Aiken	Marshall
Semo County Medical Society (Stoddard, New Madrid, Mississippi, Scott)	10	W. J. Ferguson	Sikeston	Wm. C. Critchlow	Sikeston
Shelby	2	Perry C. Archer	Shelbyville	T. J. Hoerchler	Shelbina
South Central Counties Medical Societies (Howell-Oregon-Texas-Wright-Douglas)	9	S. W. Connor	Mountain Grove	A. C. Ames	Mountain Grove
Vernon-Cedar	6	T. B. Todd	Nevada	W. H. Allen	Nevada
Webster	8	C. R. Macdonnell	Marshfield	E. G. Beers	Seymour

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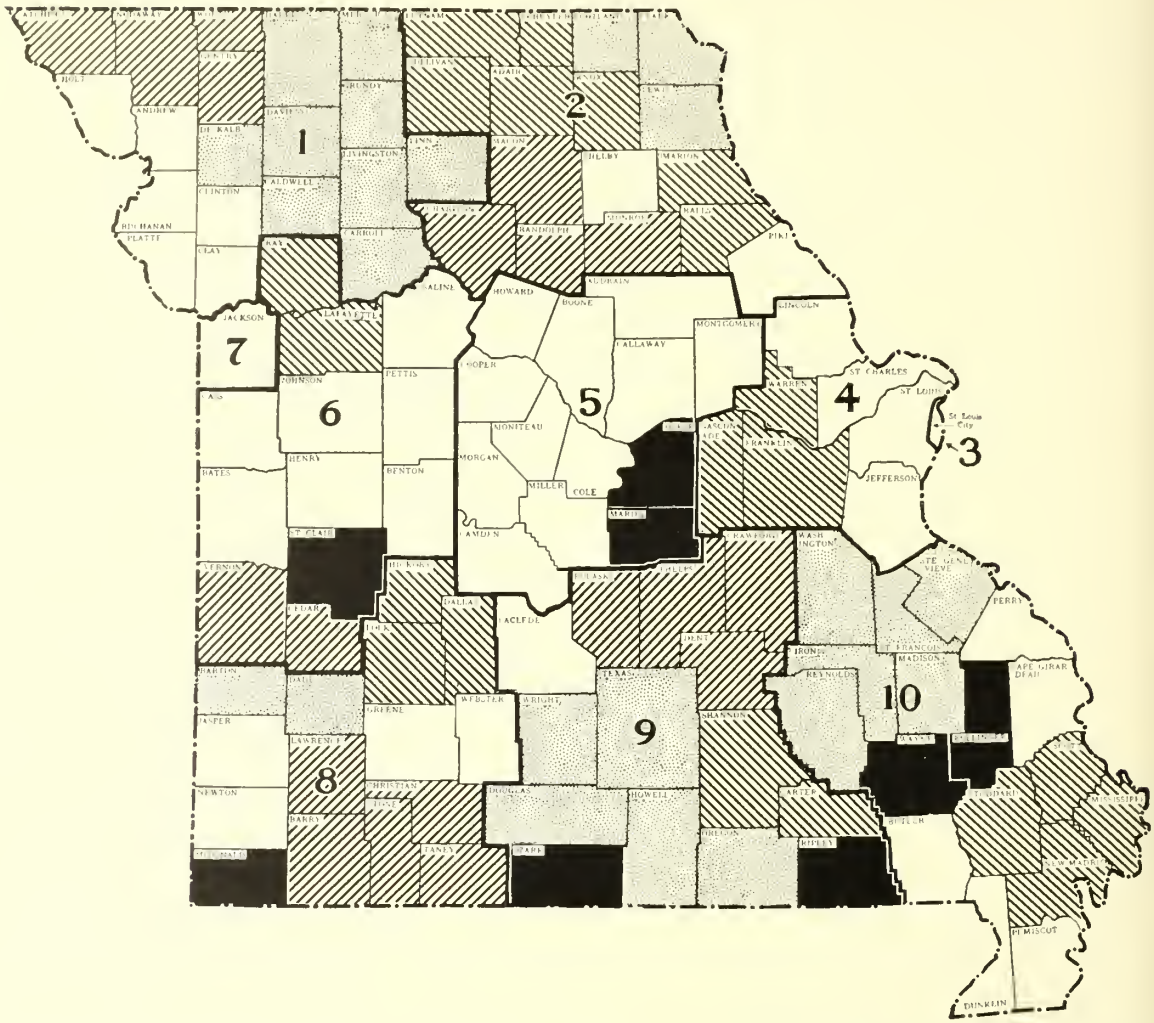
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Second District: Councilor, W. F. Francka, Hannibal. Counties: Adair, Chariton, Clark, Knox, Lewis, Macon, Marion, Monroe, Pike, Putnam, Ralls, Randolph, Schuyler, Scotland, Shelby, Sullivan.

Third District: Councilor, R. O. Muether, St. Louis: St. Louis City.

Fourth District: Councilor, John O'Connell, Overland. Counties: Franklin, Gasconade, Jefferson, Lincoln, St. Charles, St. Louis County, Warren.

Fifth District: Councilor, J. Loren Washburn, Versailles. Counties: Audrain, Boone, Callaway, Camden, Cole, Cooper, Howard, *Maries*, Miller, Moniteau, Montgomery, Morgan, *Osage*.

Sixth District: Councilor, R. W. Kennedy, Marshall. Counties: Bates, Benton, Cass, Cedar, Henry, Johnson, Lafayette, Pettis, Ray, *St. Clair*, Saline, Vernon.

Seventh District: Councilor, Victor B. Buhler, Kansas City. County: Jackson.

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Ninth District: Councilor, J. H. Summers, Lebanon. Counties: Carter, Crawford, Dent, Douglas, Howell, Laclede, Oregon, *Ozark*, Phelps, Pulaski, *Ripley*, Shannon, Texas, Wright.

Tenth District: Councilor, Frank W. Hall, Cape Girardeau. Counties: *Bollinger*, Butler, Cape Girardeau, Dunklin, Iron, Madison, Mississippi, New Madrid, Pemiscot, Perry, Reynolds, St. Francois, Ste. Genevieve, Scott, Stoddard, Washington, *Wayne*.

Counties in italics are not organized.
Organized county medical societies are shown in white, organized hyphenated societies in shaded and unorganized counties in black. Heavy lines and numbers denote Councilor Districts.

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1. Hutchesan, J. M.: Management af Cardiac Failure. *Virginia Med. Manthly*, 74:458, Oct., 1947.
2. Nath, P. H.: Pick's Disease: A Recard af Eight Years' Treatment with Salyrgan, Ammanium Nitrate, and Abdaminal Paracentesis. *Prac. Staff Meet. Maya Clin.*, 12:513, Aug. 18, 1937.

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*Davis, W. D., Jr.: A Critical Evaluation of Therapy in Cirrhosis of the Liver, South. M. J. *44*:577 (July) 1951.

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*Sobel, S. H.: Milk Allergy in a case of Triplets, *Clin. Med.*, August 1952.

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Volume 49 September, 1952 Number 9

Scientific Articles

THE GALLBLADDER PROBLEM

R. L. SANDERS, M.D.
MEMPHIS, TENNESSEE

Silent gallstones? Innocent gallstones?

The commonest complication of gallbladder disease is obstruction of the ducts by stones or inflammatory edema and consequent changes in the architecture of the biliary tree. The inevitable effect of these changes is damage to the liver. The extent of the damage to both the biliary tree and liver will depend upon the degree and duration of the obstruction. This being true, one can best answer the question of whether there is such a thing as silent or innocent gallstones by considering just what happens to the ducts and liver in the presence of gallstones and duct obstruction. The changes which ultimately take place have been graphically demonstrated by cholangiograms of the biliary tree of livers removed from patients who died following duct obstruction; the cholangiograms were made after injection of the ducts with an opaque substance and dissolution of the liver itself with acid. It was shown that the impediment to the flow of bile produced by stones and infection first gives rise to dilatation of the ducts, both intrahepatic and extrahepatic. As the obstruction persists, the peripheral ducts and intercellular canaliculi become dilated and rupture, producing a clubbing of the ducts. At the same time, the parenchyma undergoes degeneration and the liver cells throughout are distorted by the pressure of the expanding canaliculi, thus becoming atrophic. The ultimate outcome is a state of hydrohepatosis. This situation is identical to that which develops in the kidney incident to blockage of the ureter; back pressure into the kidney leads to destruction of the parenchyma and hydronephrosis. These same changes may be seen in the presence of a functionless gallbladder incident to long standing chronic cholecystitis, with or without stones, wherein the ducts take over the function of the gallbladder and become enlarged.

Presented at the 94th Annual Session of the Missouri State Medical Association, March 30-April 2, 1952, St. Louis.

The damage is not limited to the biliary tree and liver, however; the pancreas as well, may suffer from duct obstruction. I have observed varying degrees of pancreatitis in a large number of cases, the process being so severe at times as to overshadow the disease in the gallbladder itself.

In this picture of the pathologic changes which take place in the liver and pancreas, one can also find the answer to the question of how to advise the patient who has gallstones, but few symptoms. The symptoms may be so mild, in fact, that the patient has no suspicion of an abnormal condition. Not infrequently, the flatulence and dyspepsia of gallbladder disease is attributed to increased weight, to dietary indiscretions and to the natural changes of added years. Even though the symptoms are not disturbing, the destructive changes in the ducts, liver and pancreas are continuing. If the gallbladder is removed and the duct obstruction is released early, the process may be expected to subside spontaneously; otherwise, the damage may become so extensive as to preclude spontaneous repair following cholecystectomy. Moreover, with the passage of time, the systemic as well as local effects of these complications impair the patient's resistance to surgery, increase the difficulty of the operation, prolong convalescence and even permanently affect the patient's general health.

Another consideration to be borne in mind in the presence of long standing gallstones is that of a possible malignancy of the gallbladder. The exact incidence of this complication is not known, though it has been quoted as high as 4 to 5 per cent of all calculous gallbladders—a rate higher than the mortality rate of cholecystectomy for chronic cholecystitis. In any case, the removal of the gallbladder containing stones is an excellent prophylactic measure against malignant change.

Under these circumstances, I feel that the patient with gallstones, though they are apparently innocent, should be warned of their danger and that sooner or later they will manifest themselves symptomatically in no uncertain terms.

When, as sometimes happens, one finds unsus-

pected gallstones at operation for some other disease condition, I generally advise removal of the gallbladder ten or twelve days later while the patient is still in the hospital, provided there are no contraindications to further surgery. If informed of the risk of delay, most patients will accept this advice. Since the abdomen is then opened before the insult to the peritoneum is overcome, the reaction to the second operation is usually less pronounced than to the first, and convalescence is thus facilitated.

In an occasional case, a serious heart ailment or some other advanced intercurrent disease may contraindicate cholecystectomy unless the symptoms are severe. I have, however, been inclined to remove the gallbladder even in the presence of a rather disabling heart trouble. It has been my experience that the cardiac symptoms of many of these patients are improved following operation; indeed, many supposedly diseased hearts recover completely.

Noncalculous Cholecystitis.—Experience has materially narrowed the concept of the indications for removal of the chronically diseased gallbladder without stones. As a rule, I do not recommend removal of such gallbladders, having found that the results are often disappointing. Probably an average of 35 per cent of patients who have a cholecystectomy for a noncalculous gallbladder are troubled with biliary dyskinesia postoperatively. The symptoms may at times be produced by overlooked duct stones, associated pancreatitis, hepatitis or cholangitis, adhesions, or an inflammation or other lesion of the cystic duct remnant. More often, however, they are due to removal of the gallbladder on no other basis than the demonstration of poor function. Although the poor function may arise from a disturbance of the sphincteric mechanism, the underlying cause will probably be found in a neurogenic disorder, some abnormal constitutional state or an organic lesion outside the gallbladder. If, however, a total loss of gallbladder function is demonstrated and is associated with clear-cut, severe and persistent symptoms, if jaundice is present or the patient gives a history of jaundice, or if complications referable to the liver or pancreas are associated, then one may feel justified in removing the gallbladder despite the fact that no stones are shown in the roentgenogram. Not infrequently in such cases, stones will be found either in the gallbladder, the duct or both.

Acute Cholecystitis.—There are two schools of thought regarding the treatment of acute cholecystitis. One group of surgeons believes that immediate removal of the gallbladder is best, while the other group recommends delayed operation in order that the acute process may have an opportunity to subside, thus permitting the operation to be performed as an elective procedure.

In my experience, approximately 85 per cent of acute gallbladder attacks are produced by a stone or stones in the cystic duct. In the remainder, the acute symptoms are brought about by angulation of the duct, a chemical reaction or other cause. In the absence of a mechanical obstruction, present opinion is largely in favor of a chemical factor in the production of the acute process. This chemical reaction may be due to a reflux of pancreatic secretion into the gallbladder, though in the majority of cases a concentration of bile salts in the gallbladder is probably responsible.

As to the management of acute cholecystitis, in the first place, the patient should be sent to the hospital at the earliest possible moment after the onset of the attack. In the second place, any necessary supportive measure should be instituted immediately. Otherwise, the management must rest upon the findings in the individual case. In my opinion, there are three indications for surgery in these acute cases: (1) sustained pain, i.e., pain which fails to subside or increases within twenty-four to forty-eight hours after the onset; (2) the persistence of a palpable, tender mass in the right upper quadrant, and abdominal rigidity; (3) a systemic reaction characterized by an elevation of temperature and a rising leukocyte count, despite the use of supportive therapy. Especially are sustained pain and a tender mass positive indications. In some patients, particularly those in poor general condition, operation may be delayed as long as seventy-two hours unless meanwhile the attack appears to increase in severity. In any case, if the symptoms and signs show no evidence of abatement within from forty-eight to seventy-two hours, operation is advisable. Further delay is not only dangerous to life but the edema of the tissues will make identification of the structures difficult, adding to the operative risk.

In any consideration of operative intervention in acute cholecystitis, the danger of a perforation is obviously of first importance. This is true whether or not the gallbladder contains stones. At the Sanders Clinic in a series of approximately 1,200 operations for cholecystitis, more than one third the fatalities followed perforations. Of 175 patients who were operated upon for acute cholecystitis, 20 per cent had a perforation of the gallbladder. These figures speak for themselves of danger of perforation in acute cholecystitis.

Obstruction of the Ducts.—Because of the frequent association of duct obstruction with cholecystitis and its damaging effect upon the liver and pancreas, the question of opening the ducts often presents itself in operations upon the gallbladder. As is well known, obstructions necessitating choledochotomy are likewise usually produced by a stone or stones. The ducts have been opened in 20 per cent of all our operations for benign gallbladder and duct disease and, of this group, duct stones have been found in 73.5 per cent.

Since complete obstruction of the duct is the exception rather than the rule, one is at times in doubt as to whether or not a choledochotomy is indicated. When in doubt, I usually explore the ducts, though ordinarily I do so only for the following reasons:

1. A palpable stone in the duct.
2. Jaundice or a history of jaundice.
3. Abnormal dilatation of the duct.
4. A contracted gallbladder containing stones.
5. Multiple small stones in the gallbladder with an enlarged, patent cystic duct.
6. Flocculent bile in the duct, as shown by aspiration.
7. Gallstones associated with chills and fever.

The palpation of a stone may at times be difficult, especially if the duct is excessively dilated. Moreover, one should take care not to mistake an enlarged gland for a stone in the duct.

In all operations for cholecystitis, it is our custom to examine the ducts visually as well as by palpation, unless the process is too acute and edema too extensive. Thus far, we have found the common or hepatic duct, or both, dilated in almost 80 per cent. Clearly, an abnormal enlargement of the duct is not alone sufficient reason for choledochotomy. Not infrequently, the abnormal dilatation is produced by occlusion of the cystic duct with a stone in long standing cholecystitis, the duct having taken over the function of the gallbladder. In other cases, it is due to extrinsic mechanical obstruction and, in still others, is secondary to a gallbladder infection and is thus amenable to relief by cholecystectomy alone.

While one's first thought in the presence of jaundice is of a duct stone, it is well to remember that in a not inconsiderable number of cases, the jaundice may arise from duct obstruction incident to an inflammatory reaction in the duct or pancreas, a malignancy or stricture. Occasionally, also, I have opened a dilated duct because of jaundice only to find no explanation for the obstruction other than a possible spasm of the sphincter of Oddi.

When one encounters a gallbladder no larger than the thumb, one may be sure of a long standing disease. Even though the organ does not contain stones, they will probably be found in the ducts. Again, in the presence of multiple stones in the gallbladder and an enlarged, patent cystic duct, it is more than likely that small stones will have passed into the common duct. Cloudy, flocculent bile, as determined by aspiration, likewise suggests an occlusion of the distal end of the duct by a stone.

In the presence of stones in the gallbladder or ducts, certain precautions should be observed at operation in order to preclude the necessity for a subsequent choledochotomy for removal of stones. First, the cholecystectomy should be performed before the ducts are explored; otherwise, stones may be extruded into the common duct during manipulation of the gallbladder. Second, every possible means should be employed to clear the ducts at the time of exploration. The hepatic as well as the common duct should be thoroughly searched, and the ampulla explored with scoops. The patency of the distal end of the common duct should be proved by means of a probe; if an obstruction is found, the sphincter should be gradually dilated with special dilators, though not to a diameter larger than that of the common duct. Thereafter, a T-tube is inserted into the duct and brought out through a stab wound to the outer side of the incision.

Occasionally, one finds an abnormally enlarged duct containing multiple stones, sand and muddy material, its distal end almost completely strictured; thus, it is difficult to dilate the outlet sufficiently to insure continuous and ample drainage. Following attempted dilation, moreover, the area tends to contract again and bring about another impediment to the flow of bile. This leads to a reaccumulation of stones and sandy material, the original picture is reproduced and a second operation becomes necessary. In such cases, choledochoduodenostomy has been found to be an effective method of relieving the obstruction. The procedure is not only comparatively easy from the technical standpoint, but is physiologic in principle and thus offers a wide margin of safety. All the bile is immediately made available in that part of the intestine where it normally empties and intestinal function is soon restored.

The first requisite to choledochoduodenostomy is an abnormal enlargement of the duct, sufficient to permit a large stoma. By incision of both the duct and the duodenum in the longitudinal direction and side-to-side anastomosis, the stoma may be made of adequate size to obviate contraction; thus, stricture and obstruction are unlikely and bile drainage remains free and constant. In a rather large series of choledochoduodenostomies, we have not encountered one wherein reflux into the liver or ascending cholangitis has been a serious problem. We attribute this to the wide anastomosis and ample drainage.

CONCLUSIONS

Experience with more than 1,200 operations for cholecystitis has convinced us that the success of surgery in these cases depends primarily upon the thoughtful selection of patients for operation. The chief problem in this respect is encountered in noncalculous cholecystitis, wherein most of the surgical failures lie. Caution in operating without sufficient evidence of gallbladder disease and an investigation of every other possible source of the patient's complaint would obviate most of the poor results in this group.

In the presence of gallstones, there is no question of whether or not the gallbladder should be removed, but rather the question is how soon the patient can be ready for operation. The answer

is, the sooner the better. By pursuing this course, one will find increasingly fewer patients with duct stones, fewer with damage to the liver and pancreas, fewer with acute cholecystitis and perforation. Thus, the operative procedure will be simplified and the danger minimized, and the ultimate outcome will be more likely to meet with the approval of both the patient and the surgeon.

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NUTRITIONAL DISTURBANCES INCIDENT TO GASTRECTOMY

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In the last twenty-five years the mortality rate following gastrectomy has been reduced about 50 per cent.[1] The reason for the marked change is not due to the surgical technic, which has changed but little during this time, but due to the better understanding of the nutritional balance and other factors of the preoperative and postoperative care. These factors account for the marked decrease in the mortality and morbidity and the impunity with which gastric problems are now attacked surgically. There is a much better understanding of the physiology of the gastrointestinal tract and one can better correlate it with extensive operative procedures on the stomach.

Gastrectomy for inflammatory and obstructive lesions is one of the most gratifying major surgical problems in general surgery. It not only relieves the primary condition but afterwards greatly improves the general condition of the patient.[6] The loss of the stomach seems a small price to pay for the relief of the distressing symptoms that it causes.[5] A small percentage of gastrectomy patients, however, develop certain postoperative symptoms which are undesirable; for example, bilious vomiting, "the dumping syndrome," vitamin deficiencies, anemias, weight loss, weakness, diarrhea, sweating, flatulence and other disturbances. It is this type of patient with which this paper is concerned.

The stomach has a reservoir function, retaining digestive food and releasing it to the small intestine in small amounts at a time. Following gastrectomy the food leaves the stomach pouch in large amounts and in an unprepared state. The stomach also has a digestive function initiating the breakdown of protein and fat and breaking down large particles of food so that they are more easily acted upon by the digestive enzymes of the gastrointestinal tract. When these functions are lost, an extra load is placed on the small intestine by increasing the absorptive time and burden on the breakdown mechanism.

The digestive process is further impaired because of the short circuiting operation that usually leaves the duodenum in a position of passive function. The food therefore misses the direct digestive action of the bile and pancreatic secretion of the duodenum until passed into the jejunum.

A recent test for this function has been described by Eric Wollanger of the Mayo Clinic who measures the metabolism of food in the small intestine by a fat assimulation diet. He has concluded that there is a definite impairment of gastrointestinal function even though the small bowel has remarkable compensatory powers. A certain small percentage of cases showed large amount of fat and nitrogen in the feces regardless of the type of gastric surgery performed. The preoperative evaluation of the patient also did not help in determining which patient would have this difficulty. Wollanger has shown that when the remainder of the stomach is anastomosed to the duodenum there is much less disturbance of gastrointestinal function.[8]

Postoperative x-ray studies of gastrectomy, partial gastrectomy and gastro-enterostomy show that the food goes rapidly into the small intestine. From there it is noted that it continues its rapid descent to the terminal colon. Due to the rapidity with which the food passes through the small and large intestine, there must be some degree of interference with digestion, secretion and absorption. This results in postoperative nutritional deficiencies and anemias. The excess bulky food causes an excess of secretion from the intestine. The motor function of the small bowel is so stimulated that it causes distressing cramps, gas, belching and other intestinal disturbances.

The kind of food taken during his illness should be considered in evaluating a patient's condition before surgery. It is usually true that in such cases the diet is inadequate and is a precursor to the anemic tendency.

Pernicious anemia is a rare complication of gastrectomy; however, it does occur usually from two to fifteen years afterwards and it is therefore important that one keep such patients under long continued observation.[5] These patients present the typical signs and symptoms of posterolateral column gastrointestinal symptoms and, fortunately, they respond nicely to antipernicious anemia therapy.[2] The antipernicious anemia factor is probably produced in the gastrointestinal tract in the pylorus and duodenum by the interaction of the so-called external food factor and the intrinsic or the enzyme factor. There must, however, be other factors as one finds a large margin of safety due to the rarity of this condition following gastrectomy.

The usual type of anemia following gastrectomy is the iron loss type, a microcytic, hypochromic picture. The small intestinal diarrhea, which frequently develops, may inhibit the absorption of hematinic elements necessary for adequate blood regeneration.

Presented at the 94th Annual Session of the Missouri State Medical Association, March 30-April 2, 1952, St. Louis.

The amount of the stomach removed has no constant relationship to the development of the anemia or the severity. In a large series of Hartfall the most severe cases of anemia were found when only one half of the stomach was removed.[4] I have also found this true in my experience.

Undoubtedly the necessary short circuit operation in gastrectomies interrupts the control of the pylorus and interferes with gastric evacuation and reflex behavior of the small intestine. The duodenum undoubtedly plays a role in proper gastrointestinal digestion and the function is definitely lost in most radical gastric surgery such as the usual Polya operation. Schoemaker's operation of anastomosing the esophagus or proximal end of the stomach to the duodenum more closely resembles the normal relationship of the gastrointestinal tract and has been shown to have a much smaller incidence of anemia.[4]

After gastrectomy the whole process of temporary storage, churning, liquefaction and dilution is done in the neutral Ph of the small intestine and under these conditions large amounts of vitamins may be destroyed or inactivated. It is also possible to demonstrate B. Coli in the remaining portion of the stomach following subtotal gastrectomy and these organisms have been found to inactivate vitamins and other essential elements for normal gastrointestinal function. Due to the poor nutritional standards of the British people, their postoperative care makes a good source of study for these deficiencies. Recently, in a series of gastrectomies, Dr. Richard Wilbourn of England demonstrated all types of glossitis, stomatitis, peripheral neuritis, mental symptoms, fatigue and other vitamin deficiency symptoms and these have rapidly responded to adequate vitamin therapy.[6]

In about 50 per cent of Wilbourn's cases he has demonstrated various degrees of vitamin deficiencies. The primary vitamins involved are the entire B complex, A, C and D. The most common syndromes are those of hyporiboflavinosis, as manifested by cheilosis, angular stomatitis and glossitis and also B_1 deficiencies with peripheral neuritis symptoms. Riboflavin and B_1 are stable in acid media only and achlorhydria may allow large amounts or quantities of these vitamins to be destroyed.

Preoperative evaluation should include an overall estimate of the patient's reserve to stand extensive gastric surgery. Because of their disease patients are usually in a state of definite nutritional imbalance. The plasma proteins, chlorides, nonprotein nitrogen and blood volume should be within normal limits and any degree of obstruction should be noted.

Dehydration and hypochloremia must be corrected. Hypoprotenemia should be treated with blood transfusions, plasma, amino acids intravenously and a high protein diet with at least 2 grams of protein per kilogram of body weight. It is difficult to get nitrogen balance or correct hypoprotoanemia by intravenous nutrition alone.

Due to the rapid destruction of thiamin and riboflavin, heavy dosages of these vitamins and also vitamin C for wound healing are stressed.

Immediate postoperative care usually includes penicillin, several blood transfusions, early ambulation and a fluid intake to insure an output of at least 1,000 cc. daily. I use the Abbott-Rawson double lumen tube to decompress and feed the patient at the same time. At least a daily 4,000 cc. fluid intake including whole blood, 2,000 cc. intraveniously, protein hydrolysate in glucose with vitamins B and C are insured. Also from 1,000 to 1,500 cc. of a slow tube drip feeding of a 2,500 caloric mixture containing six whole eggs, two egg whites, four ounces of skim milk powder, 300 gm. of lactose and 1,000 cc. skim milk is used. With the occasional diarrhea, carolose is substituted for lactose.

To the tube feedings are added: iron 25 mg., sodium chloride 6 gms., vitamin A 8,000 I.U.; thiamin 5 mg.; ascorbic acid 150 mg.; riboflavin 6 mg., niacin 30 mg., and vitamin D 500 I.V. This regime is carried on for about three to four days, at the end of which time the tube is removed and for the next three days, every three hours the patient is given three to four ounces of milk, cream, ice cream, strained oatmeal and soups by mouth. The next three days toast, crackers, poached eggs, custards, cooked oatmeal, cooked fruits, fish, ground meats and vegetables are added.

One must expect gastric disturbances to follow major gastric surgery, however, life can be made livable and comfortable if certain ordinary precautions are taken. Proper postoperative care will help to eliminate the occurrence of most nutritional problems. As a result of the non-physiologic operation patients must be taught to alter their dietetic habits. They usually have a satisfactory appetite; however, small amounts of food quickly relieve their hunger. An ordinary meal will often cause discomfort and for this reason they are put on a regular six meal regime instead of the usual three meals a day. The diet should contain sufficient anti-anemia factors and copious amounts of all vitamins, especially thiamin, riboflavin and ascorbic acid. Obesity is usually not one of the nutritional problems and patients usually have a hard time maintaining a normal weight.

Restriction of fluid intake also helps the patient to assimilate the food better with less distress. When fluids are taken they should not be cold since chilled foods or liquids cause discomfort.

One should take into consideration the oral status of the patient, as it is important that the food reaches the jejunum in as finely a divided state as possible. Patients should be encouraged to chew their food thoroughly and those with poor dental occlusion may need a mechanical breakdown of food before ingestion. Improved digestion will also result if time is taken to eat leisurely, and

dying down for short periods after eating is also recommended. A high protein and low carbohydrate diet seems to be better tolerated by these patients.

Hydrochloric acid is usually not recommended because of the lack of pepsin to be activated by the acid. Pepsin and other digestants are not needed to replace the loss of gastric juice.[9]

Occasionally swallowing difficulties and dysphagia may result from narrowing or spasm of the esophagojejunal opening and bougi dilatations are frequently helpful. In about 30 per cent of 139 gastrectomies at the Lahey Clinic this procedure was necessary.[9]

Banthine with its anticholinergic action of decreasing gastric motility emptying, and diminishing peristalysis in the intestinal tract has been of help in certain cases of disturbed motor activity both preoperatively and postoperatively.

In conclusion, it is apparent that major gastric surgical procedures including complete removal of the stomach may be done without fear of disturbing adequate function of the gastrointestinal tract. A certain amount of nutritional disturbance following gastric surgery is found; however, if the symptoms are treated early and adequately, the ordinary patient may be expected to reach a normal nutritional equilibrium and maintain a reasonably comfortable existence.

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AMERICAN MEDICAL ASSOCIATION SURVEYS DOCTORS ON DISCHARGE FROM ARMED FORCES

In an effort to find out how effectively the armed forces utilize medical personnel, the American Medical Association's Council on National Emergency Medical Service currently is initiating a survey of doctors newly discharged from active military service. From comments, suggestions and criticisms submitted by these physicians, the Council hopes to draw up an effective yardstick for reexamination of the doctor draft law which will be up for renewal July 1, 1953. Questionnaires are being sent to all physicians who have been discharged from service since June 25, 1950.

THE MANAGEMENT OF PROLONGED LABOR

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During the last three decades the maternal mortality has been reduced materially and further improvement is to be expected. As Gordon[1] points out, a large share of the credit for this improvement must be given the pioneers of the return to the conservative approach to obstetrics, such men as Polack, Kosmack, Calkins and many others. In addition, the great progress that has been made can be attributed to critical analysis and discussion of our own end results. It is in this latter field that this study is concerned.

Prolonged labor remains one of the most disturbing problems that faces the modern obstetrician, and one that requires the utmost in judgement and skill. Our approach to the problem has been one of conservatism and this paper is designed to define the nature of this mode of management and present the results in a small group of patients so treated.

DEFINITION

The precise definition of prolonged labor has been subject to considerable debate. Perhaps the best definition is that given by Gosgrove and Glisson[2]: "A labor may be said to be pathologically prolonged when the advancement toward its termination ceases to be commensurate with the amount of force estimated to be exerted on the fetus by the contractions of the uterus." However, for the purpose of a study such as this, some definite limits of time must be set. The length of labor which is considered as pathologic may vary from the eighteen hour limit set by Tollefson and Webb[3] to the forty-eight hours which are advocated by Bourne and Bell.[4] The problem is further complicated by the necessity of defining accurately the onset of labor. In this group of cases the time limit has been set arbitrarily as twenty-four hours and the onset of labor is counted from the time that progressive dilation of the cervix begins. The period during which effacement and softening of the cervix is taking place is disregarded in order to assure a more accurate end point.

TREATMENT

To speak of conservative treatment of prolonged labor is a misnomer. Treatment is too often radical, while the term management could be more appropriately applied to the conservative

Presented at the 94th Annual Session of the Missouri State Medical Association, March 30-April 2, 1952, St. Louis.

aspect of the problem. Conservative management might be summed up briefly as maintenance of adequate nutrition and rest in both baby and mother and delivery by the simplest possible procedure when the proper time arrives. Most of the methods of arriving at these desirable ends are well known, but a few deserve reemphasis.

The primary consideration lies in anticipation. Any labor is potentially able to turn into a prolonged laber. Certain types of situations lead to this complication more often than others. Primiparous breech presentations and the patient with the early inertia type labor may well present prolongations of the normal. Each patient should be so managed that if the labor is prolonged she does not enter the extended period with fatigue, rapid pulse, temperature elevation and dehydration already present.

Maintenance of food, fluids and rest in the patient are of prime importance. As a general rule, parenteral fluids are used even if the patient is able to take fluids by mouth since the studies of LaSalvia and Steffen[5] have shown that the emptying time of the stomach is markedly slowed by labor, even if uncomplicated by analgesia. Glucose solutions in distilled water are probably the most useful, the amount and strength to be determined on an individual basis. Rest is furnished by the free use of barbiturates and morphine derivatives, the type used being that which will be least likely to cause nausea and thus increase the dehydration of the patient. In general the theory of Mengert that rest should be given during the night and the patient allowed to labor during the day is excellent although we have tended to rest the patient when she shows such evidence of exhaustion as increased pulse, ineffective pains or longer intervals between contractions.

The modern antibiotics used skillfully have almost done away with the old problem of intrapartum infection and aspiration pneumonias in the newborn in these cases. We ordinarily give antibiotics even if the membranes are unruptured when the patient has been in labor more than twenty-four house, since the work of T. K. Brown some years ago has shown that positive cultures can be obtained from a uterus after only twelve hours of active labor even with unruptured membranes. As a rule penicillin and one of the sulfa preparations are used in conjunction because of their proved synergistic effect.

Careful estimation of the pelvis is of course essential in this type of management. Clinical evaluation should be aided by roentgen pelvimetry if any doubt exists as to the adequacy of the pelvis in relation to the particular passenger with whom one is dealing.

Preparations should always be made to guard against the possible excessive loss of blood that may occur in the immediate postpartum period and patients are routinely typed and cross-matched and compatible blood is held ready for use if the labor is prolonged.

One of the most important things in the management of these cases is the evaluation of progress. In most instances rectal examinations are unsatisfactory and the sterile vaginal should be resorted to. It is our belief that progress should be checked periodically in this manner. Reid[6] has pointed out the danger to the fetus in increased mortality when the labor continues without progress.

The use of fractional doses of pituitrin to stimulate contractions of the uterus has become increasingly acceptable in recent years. Eastman[7] and Reid[8] have advocated this measure as saving difficult operative deliveries and shortening the actual duration of labor. An absolute prerequisite is the sure knowledge that the pelvis is adequate. We have in general reserved the use of this drug for second stage stimulation although we have not hesitated to use it in selected cases during the first stage. Turtola[9] has pointed out in his study of the various methods of stimulating the uterine contractions that in spite of good results in stimulating contractions in the first stage, operative deliveries were necessary in a high percentage of the cases because of uterine exhaustion. Thus it has seemed logical to use the drug only when the cervix is completely dilated, and only in order to simplify the method of delivery.

The selection of the proper time and method of delivery are also of great importance. Reid has said: "It has been suggested that prolonged labor *per se,* is not necessarily harmful, but prolonged labor accompanied by a difficult forceps operation is a combination that is extremely lethal to the baby." For this reason every effort is made to make the ultimate delivery as simple as possible. This includes the use of fractional doses of stimulating drugs as mentioned before, attempts to get the utmost in voluntary effort from the patient herself (a result that can only be obtained if the mother arrives at this point with a sufficient reserve of strength to make it possible) and, probably most important of all, patience on the part of the obstetrician. To aid in rotation and descent we use the obstetric binder as advocated by Beck. In our hands this almost forgotten obstetric aid has been of incalculable value. In spite of this, the operative rate is higher in these patients than in usual practice.

Fetal mortality can be cut down by careful handling and care of the infant after delivery. It is our practice to place these babies immediately under the care of a competent pediatrician. Warmth, oxygen and gentle handling in the immediate post delivery period are augmented by antibiotics and other supportive measures in the nursery.

RESULTS

The success or failure of any method of man-

agement can be evaluated only by the end results. For this reason we have taken the liberty of presenting our results in a small group of patients, realizing that the statistical value of such a group is negligible. There were 117 cases of labor which met the definition of prolongation presented earlier in a total of 3,223 deliveries, an incidence of 3.63 per cent. This fits the incidence of such cases that are quoted in the literature which range from 1.4 per cent to 10 percent.[2, 3, 4, 6, 10, 11, 12, 13, 14] These labors were divided into groups on the basis of the duration of labor.

Table 1. *Prolonged Labor*
(Incidence 3.63 per cent)

Group	Duration (Hours)	Number Cases	Age Range (years)	Av. Age. (years)	Parity 0	Parity +
I	24 to 30	39	18 to 37	25.8	37	2
II	31 to 40	31	20 to 42	27.2	25	6
III	41 to 50	19	19 to 39	29.8	15	4
IV	51 to 60	12	19 to 34	28.3	12	0
V	61 up	16	19 to 37	27.0	16	0
All		117	18 to 42	27.3	105	12

Table 1 shows the distribution of these cases along with age and parity. There was no significant deviation of age groups in these patients as compared with our practice as a whole, and the parity corresponds rather closely with those quoted elsewhere in the literature.

Table 2. *Weight of Infants*
(117 Cases of Prolonged Labor)

Group	Weight Range (Gm.)	Aver. (Gm.)
I (24-30 hr.)	2270 to 4250	3462.2
II (31-40 hr.)	1446 to 4165	3256.6
III (41-50 hr.)	2610 to 4165	3544.8
IV (51-60 hr.)	2440 to 4255	3336.2
V (61 hr. up)	1930 to 4480	3023.4
Total	1446 to 4480	3338.6

Table 2 shows the weights of the infants in the various groups. It can be seen that there is no constant trend in relation of weight of baby to the length of labor.

The importance of disproportion has been stressed previously. Bradford, Wolz and Bradford[11] believe that disproportion played a part in 50 per cent of their cases. Other authors report incidences of 6 per cent (Odell, Randall, and Scott[12]) and 7.6 per cent (Schmitz et al[13]). Studdiford[14] on the other hand believed that the role of pelvic disproportion in his series was small. In this group a pelvis was considered small if the diagonal conjugate was 10 cm. or less, the outlet index was less than 15 cm. or there was evidence by roentgen pelvimetry of volumetric disproportion of the pelvis and the fetal head. On this basis there were only seven small pelves in this group for a total incidence of 6.7 per cent. No constant trend in regard to duration of labor is noted.

That this factor played a relatively small part in the labors is shown by the analysis of the first and second stages of labor. In general the second stages were only slightly prolonged and,

Table 3. *Duration of Stages of Labor*

Group	First Stage	Second Stage
I (24-30 hr.)	24 hr.-08 min.	1 hr.-36 min.
II (31-40 hr.)	32 hr.-49 min.	1 hr.-58 min.
III (41-50 hr.)	44 hr.-14 min.	1 hr.-35 min.
IV (51-60 hr.)	52 hr.-39 min.	2 hr.-19 min.
V (61 hr. up)	90 hr.-14 min.	1 hr.-42 min.
Average	41 hr.-40 min.	1 hr.-46 min.
Av. Practice	9 hr.-22 min.	1 hr.- 0 min.

22 had second stage of more than 2 hr.
66 had second stage less than 1 hr. 30 min.

in most instances, can be accounted for on the basis of maternal exhaustion and caution on the part of the obstetrician. In only twenty-two cases was the duration of the second stage more than two hours and in sixty-six cases it was under one and one half hours.

Table 4. *Position*
(117 Cases Prolonged Labor)

Position	OA	OP	OT	Breech	Bregma	Comp.
Number	52	45	10	10	1	1
Per cent	43.7	37.8	8.4	8.4	0.8	0.8

Presentations encountered are shown in table 4. The incidence of abnormal presentations is rather higher than would be normally encountered. However, these figures represent the presentations as determined early in labor and do not take into account the ease or difficulty of rotation. That presentations played little part is, we believe, shown by the figures on second stage just shown. As stated previously, operative deliveries were more frequent in this series than normally encountered.

Table 5. *Operative Delivery*

Group	Spontaneous (Include Low Forceps) No.	Pct.	Operative No.	Pct.	Section No.	Pct.
I (24-30 hr.)	32	82.1	7	17.9	0	0
II (31-40 hr.)	22	68.8	10	31.2	3	9.4
III (41-50 hr.)	13	68.4	6	31.6	0	0
IV (51-60 hr.)	7	58.3	5	41.7	0	0
V (Over 60 hr.)	8	50.0	8	50.0	2	12.5
Average	82	69.5	36	30.5	5	4.2
General Practice				9.16		2.49

Since low or outlet forceps are used almost routinely in our practice, these were not considered in this study. In our overall experience the percentage of operative deliveries is 9.16 per cent with a section rate of 2.49 per cent. In this group the rates are 30.5 per cent and 4.2 per cent respectively. It is of interest that the operative rate shows a steady increase with the length of labor from 17.9 per cent in Group I to

50 per cent in Group V. In general this agrees with the work of others.

MATERNAL RESULTS

As expected, blood loss was higher in the group with prolonged labor than in the practice as a whole.

Table 6. *Blood Loss*

Group	Average (cc.)	Per Cent Hemorrhage
Prolonged Labor	221.6	2.4
General Practice	188.3	6.2
	500 cc. Blood Loss	

In table 6 are the averages. The last figure represents our experience in total practice. However, because of the notorious difficulty of estimating blood loss accurately these figures are of dubious value. More important are those who lost more than 500 cc. of blood and hence were designated as postpartum hemorrhage. In the prolonged labor group 9.4 per cent had hemorrhage as opposed to 6.2 per cent in the total group.

Table 7. *Maternal Morbidity*

Years	No. Cases	No. Morbid	Per Cent
Before 1942	47	20	42.6
After 1944	70	9	12.9*

* Corrected to 7.1 per cent.

Maternal morbidity has ceased to be of major importance since the advent of the antibiotics used prophylactically. Dividing the morbidity into two groups coincident with the advent of penicillin, (table 7), twenty of forty-seven patients before penicillin showed morbidity for a percentage of 42.6 per cent while in the period after the use of penicillin only nine of seventy patients showed morbidity, or 12.9 per cent. This latter figure could be still further reduced by omitting four patients who entered the hospital with elevated temperatures and whose morbidity was confined to the intrapartum period.

There were no maternal deaths in this series. In the larger reported series in the literature the rate ranges from the high of 2.5 per cent to none.

Table 8. *Infant Mortality*
(117 Cases of Prolonged Labor)

Group	Gross Mortality No.	Per Cent	Corrected No.	Per Cent
I (24-30 hr.)	1	2.56	0	0
II (31-40 hr.)	2	6.45	0	0
III (41-50 hr.)	0	0	0	0
IV (51-60 hr.)	3	25.00	3	25.00
V (Over 60 hr.)	3	18.75	3	18.75
Total Prolonged Labor	9	7.50	6	5.00
Practice	81	2.50	23	0.71

There were nine fetal deaths in this group (table 8). Correction of this figure by discarding three cases because of prematurity and gross fetal anomaly inconsistent with life gives a figure of 5.0 per cent fetal mortality. This is considerably higher than a similar figure on the practice as a whole in which similar corrections yield a fetal mortality of 0.71 per cent. It is also of interest that correction places all fetal deaths in the group with labors of more than fifty hours.

Reid in his study of prolonged labor points out that fetal mortality in patients with more than forty hours of labor rises to 29 per cent which coincides well with the small group presented here.

DISCUSSION

This series is too small to reach conclusions. However, it does serve to strengthen our adherence to conservative management of these cases. This we feel to be particularly true in dealing with the second stage. Judicious use of pituitrin, employment of the abdominal binder and pattience on the part of the operator will avoid many of the more severe operative procedures which will result in death to the fetus or crippling or fatal complications to the mother.

The answer to the question as to what is gained by treating these patients in this manner other than proof of the endurance of the obstetrician lies, I believe, in the subsequent labors of these patients. The mother has survived intact, and not as an obstetric cripple with subsequent danger of ruptured uterus and other complications. And, as Reid has stated, these patients usually have normal labors in subsequent pregnancies. Of thirty patients in this group who had subsequent labors under our observation the average duration of labor was four hours and thirty-six minutes. The longest labor in this group was eight hours. This at least gives us some assurance that in long range terms our management holds out the best future to these patients.

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ANTEPARTUM UTERINE BLEEDING

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THE MANAGEMENT of the patient who bleeds in the last trimester of pregnancy requires an appraisal of the source and the cause of the hemorrhage. The two entities that eclipse one's thinking, because of the hazards that they present, are abruptio placenta and the various degrees of placenta previa. Still, abnormal bleeding is probably at least as frequently caused by other entities, some of which are relatively benign.

The bleeding cervical erosion, cervical polyp, vasa previa or the rupture of a marginal placental sinus do not differ in symptomatology from placenta previa, and still the treatment required is much less formidable. Carcinoma of the cervix is not an unknown cause of bleeding in the last trimester of pregnancy. A correct appraisal of the pathology is required since improper judgment will further jeopardize the patient in her most precarious situation.

All will agree that the patient must be hospitalized immediately and blood of the correct type be made available in adequate amounts. This preliminary step is equally as important even in patients in whom the initial hemorrhage has been small and in whom no systemic effects of the blood loss has occurred.

From a clinical point of view these cases may be grouped into several categories that form a basis for management. First, let us consider mild or moderate bleeding in the last trimester of pregnancy in a patient in whom no systemic effect of the blood loss is apparent. In this patient the initial hemorrhage may cease or the bleeding may continue in an amount sufficient to be troublesome only in that it indicates the presence of a hazardous condition.

If in such a patient it is felt that the fetal salvage would be improved by waiting, such a policy has been shown to be justifiable. Sterile vaginal examination with the operating room in readiness may be deferred in the interest of the fetus. Certainly, when such an examination is performed a carefully inserted speculum may allow observation of the cervix without initiating another hemorrhage.

If the presentation of the fetus is transverse or the head resides in the iliac fossa, one may well be suspicious of a placenta occupying the lower uterine segment. Soft tissue roentgenography or the instillation of a radio-opaque substance into the bladder may be helpful in indicating the position of the placenta in the hands of those acquainted with the procedure.

In localizing the placenta radiologically, a lateral film is first taken. The posterior uterine wall may be visualized clearly, but the anterior abdominal and uterine walls, which are thinner, may be overexposed. To overcome this, various filters have been employed. Also it has been recommended viewing the anterior uterine wall on the film with a 200 watt frosted bulb. The placenta is localized in the region where the uterine wall is definitely increased in thickness.

Anteroposterior and lateral films are then taken with a contrast medium (20 to 30 cc. of Cunningham's solution or 100 to 150 cc. of air) in the bladder. The soft tissue separating the fetal head from the fundus of an air filled bladder is normally not in excess of 2 cm. In placenta previa it may be increased to 5 or 6 cm. This method can be used to advantage only in vertix presentations. The placenta can be visualized in 85 per cent of the cases.

Careful digital exploration of the lower uterine segment may indicate the presence of the soft boggy placenta interposed between the power uterine segment and the presenting part. The finger must not enter the cervical canal as this may initiate a fatal or near fatal hemorrhage.

If this boggy mass occupies the greater part of the lower uterine segment, and hence is of the central variety, the best results are obtained by cesarean section.

It might be mentioned that a pack inserted into the uterine cavity against the placental site at the time of the section may prevent excessive postoperative bleeding since the lower uterine segment lacks the ability to close the large venous sinuses by the contraction of its musculature. Such a pack will be extruded in a few days from the uterus into the vagina from where it may be removed.

In other instances, especially when the initial hemorrhage has occurred at or close to term, a sterile digital examination may fail to reveal this boggy mass over the entire lower uterine segment. The cervix may be found to be effaced with the head closely approximated to it. In such cases the placenta is of the low lying variety and simple rupture of the membranes may control the bleeding and initiate labor. This type of patient also must be watched carefully for postpartum bleeding.

All have seen cases in which the initial hemorrhage was so profuse without signs of abating that this careful method of diagnosis could not be employed. In these, with sufficient blood available, a cesarean section may be the best method of controlling the blood loss. It is therefore occasionally true that the amount of hemorrhage and the ab-

Presented at the 94th Annual Session of the Missouri State Medical Association, March 30-April 2, 1952, St. Louis.

sence of any tendency for it to decrease in amount may force one to operate on a patient who is rapidly going into shock.

Large amounts of blood must be available and at best the maternal mortality will be inevitably high. Fortunately, in most cases, the bleeding spontaneously decreases and then stops. Such a patient must be treated first for shock and the cesarean section deferred until the condition of the patient is satisfactory, as intensification of the shock may result in lower nephron nephrosis with fatal anuria.

The decision as to the form of management may depend, therefore, on the severity of the hemorrhage, the location of the placenta and the condition of the cervix.

There are numerous methods described for effecting delivery through the vaginal route; however, the only one I use is simple rupture of the membranes in cases of low lying placenta in which the cervix is effaced and the blood loss is controlled by this method.

The use of the Voorhees bag, which has as its purpose the control of hemorrhage by utilization of pressure against the separated portion of the placenta, has the disadvantage of a high fetal mortality with a maternal mortality of at least that of cesarean section. It does not enjoy the popularity that it did some years ago. At best it is a bloody procedure.

In Braxton Hicks version a foot of the fetus is grasped through an incompletely dilated cervix, and the fetal buttock is used to produce pressure against the separated margin of the placenta. This, too, is a bloody procedure which has a high fetal mortality and the maternal risk is definitely present as the lower uterine segment is subject to lacerations that may give rise to uncontrollable bleeding.

The Willett forceps is used to gain attachment to the scalp of the fetus and thereby produce pressure against the bleeding site. This may result in injury of the baby's scalp, but the method may have a field of usefulness when the fetal heart tones are absent and the fetus is small in size.

Similarly, when the fetus is small and presenting by the breech, especially where the fetal heart tones are already absent, a foot might be brought down to advantage to control the bleeding in the partial degrees of placenta previa.

The sudden onset of pain over the placental site with or without external hemorrhage associated with variable degrees of shock constitute another group of cases usually referred to as abruptio placenta. Here, too, the method of management depends on the judicious appraisal of all the factors. In such cases the fetal heart tones have almost always disappeared before the patient presents herself for management. If the cervix is long and closed, especially in primiparous women, the most direct method of controlling the condition is by cesarean section. This also gives a chance to examine the uterus, which is sometimes infiltrated with blood, so as to prevent the uterine musculature from contracting. Uteroplacental apoplexy or Couvelaire uterus, as the condition is sometimes referred to, commonly has a background of hypertensive toxemia. Removal of the uterus may be the only method of controlling the bleeding in this type of case.

Where abruptio placenta is associated with less severe manifestations in patients who are in labor and in whom delivery may be expected before the condition becomes critical, vaginal delivery is to be advised.

Nowhere in the practice of obstetrics is one called upon to utilize more cool, calculated judgment based upon a logical evaluation of all factors concerned under an atmosphere frequently of tense emergency, and nowhere is clinical judgment more rewarded in results.

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CIVIL DEFENSE BOOKLET

A series of articles covering various medical problems involved in civil defense have been compiled in one booklet, "Medical Aspects of Civil Defense," by the American Medical Association's Council on National Emergency Medical Service. Included are items on civil defense organization, medical aspects of biologic warfare, chemical defense, atomic burn injury, nature of air raid casualties, mental health and atom bomb injury. Copies are being distributed to all chairmen of state emergency medical service committees. Additional booklets at 25 cents per copy are available on request through the Council.

POSTPARTUM HEMORRHAGE

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The last few decades happily have seen a considerable decrease in maternal mortality in this country. Even previous to World War II, however, the record was less enviable than that of many

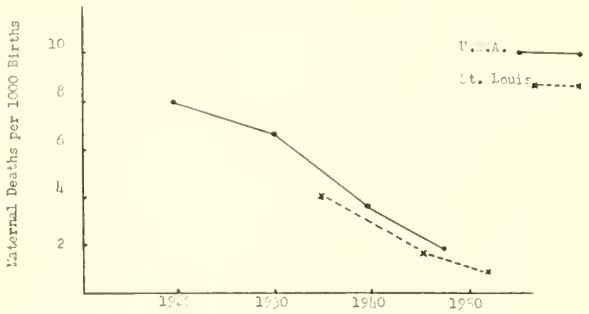
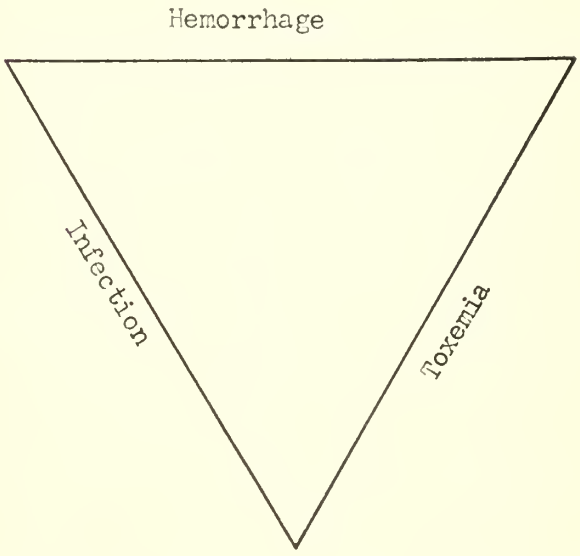


Fig. 1

European countries and it is within the recent past that the most progress has been made. A quick glance at national figures reveals the fortunate downward trend.

The leading causes of maternal mortality may be thought of as a triangle, one side being infection,



LEADING CAUSES OF MATERNAL MORTALITY

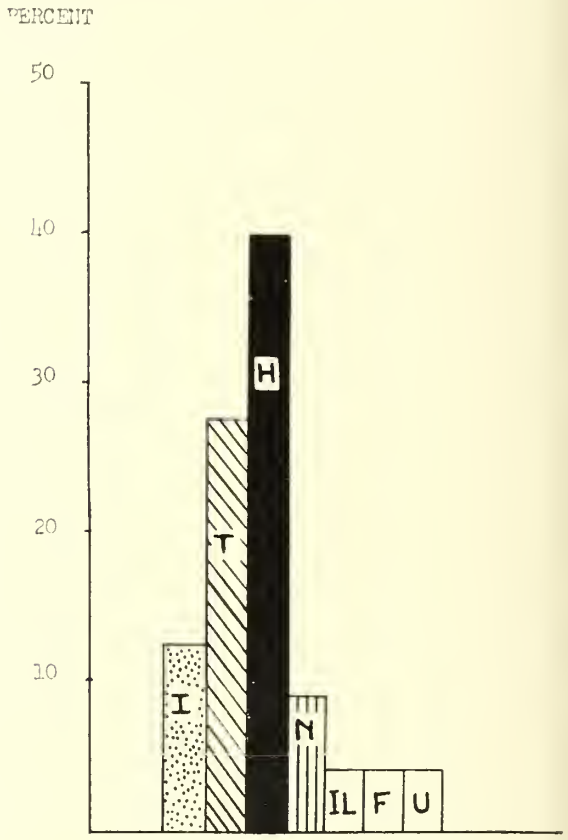
Fig. 2

one the toxemias and the third hemorrhage, trauma and shock.

With the advent of the sulfonamide drugs and potent antibiotic agents weapons for combatting septicemias have been revolutionized. The toxemias remain an intriguing but elusive problem for current and future research. The third group of hemorrhage, trauma and shock, the largest statistically, constitutes the major challenge to obstetric practice today, particularly as it is in large part amenable to vigilance, knowledge and skill available to all.

It might be of interest to note the growing relative importance of hemorrhage as a cause of maternal death in the St. Louis area.

Much credit is due to Charles Gordon[1] of Brooklyn who has emphasized consistently that hemorrhage is the number one cause of maternal death, even in the days when sepsis was statistically the major cause. He pointed out that in many cases hemorrhage played the deciding role in the patient's death even though other causes were listed on the death certificates.



CAUSES OF MATERNAL MORTALITY

ST. LOUIS AREA - 1951

Fig. 3

There appears to be no uniformity in the definition of postpartum hemorrhage. Although the amount of blood lost is generally used as a criterion, obstetricians differ as to the upper limits of normal. Greenhill[2] states that any woman who loses more than 500 cc. may be said to have had a postpartum hemorrhage. In most instances, how-

Presented at the 94th Annual Session of the Missouri State Medical Association, March 30-April 2, 1952, St. Louis.

ever, the tendency is to underestimate the amount of blood lost during labor and delivery, regardless of the cause.

Postpartum hemorrhage may be due to abnormal conditions of the uterus and the birth canal as such and also to more generalized maternal factors such as anemia, defects in the clotting mechanism, excessive weight gain, surgical anesthesia, prolonged labor, operative deliveries and exhaustion.

The uterus is subject to rupture and the cervix and vagina to lacerations. The uterus also may be atonic by virtue of overdistension by a large baby, polyhydramnios or twins. Common is the factor of primary uterine inertia. Retention of placental remnants is probably the most frequent cause of trouble. Seepage during the so-called "fourth stage" of labor may be silent but dangerous.

Prevention of hemorrhage actually should begin during pregnancy. Should any conditions predisposing to hemorrhage be discovered, appropriate measures may be taken before the events of labor and delivery ensue. Blood counts when the patient is first seen and in the eighth month are desirable, and low levels of hemoglobin corrected. Nutritional deficiencies and excesses may be corrected. The relationship of either state to the ultimate welfare of the mother and child is a real one.

During labor the possibility of hemorrhage must be kept in mind, especially when the uterus is sluggish or when it is overdistended. Too early operative intervention may cause laceration and bleeding. During delivery the uterus should be emptied slowly. Much has been written about the use of ergotrate and oxytocics. When labor has continued a long time, particularly more than twenty hours, a prophylactic dose of 1 cc. of ergonovine should be given as soon as the anterior shoulder is delivered, and 1 cc. of pituitary extract or infundin given intramuscularly after the placenta is delivered to prevent uterine atony.

Bleeding after delivery of the placenta may be most insidious. Seepage or trickling over a considerable period, often with little change in the pulse or blood pressure, may proceed until a considerable volume of blood is lost, bringing a sudden critical fall in pressure, rise in pulse and death. Careful observation of the patient and the condition of the uterus postpartum prevents most of this type of bleeding from getting out of hand. Delaying the patient in a recovery room or where observation can be close is highly desirable.

The source of bleeding must be determined. In general, with a contracted uterus a bright red flow of blood indicates cervical of vaginal lacerations, while dark venous blood is usually from a uterus that tends to relax. Many unpleasant surprises may be avoided if the cervix and vagina are inspected routinely and existing lacerations repaired.

Gentle measures should be tried first when bleeding appears after delivery of the baby. The uterus should be grasped gently and massaged, though the forceful use of the Crede maeuver before the placenta has separated should, according to present day views, be avoided. Ergonovine and pituitary extract should be used. If the bleeding does not stop, the placenta should be removed immediately and in one piece, preferably during a uterine contraction, and under the most stringent aseptic precautions. If bleeding occurs first after the placenta has been delivered or if it continues after the removal of the placenta, the uterus should be thoroughly massaged. Then 1 cc. of pituitary extract should be given intramuscularly, followed by 1 cc. of ergonovine intravenously. If bleeding still continues further exploration for vaginal, cervical and uterine lacerations should be made and, if found, repaired immediately. If an interval of waiting is necessary for the procurement of the necessary instruments the uterus can be compressed by one hand on the abdomen and the other in the form of a closed fist in the vagina. This compression often controls bleeding. In some desperate cases pituitary extract may be injected from below or through the abdomen directly into the uterus.

Uterine packs may be used, although there are arguments both for and against this technic. Uterine and vaginal packs should be used (1) for an extensive laceration of the cervix in the home or in the hospital where there is insufficient assistance to do a repair, (2) for rupture of the uterus while waiting for an operating room to be made ready, (3) in placenta praevia if there is profuse bleeding after the placenta has been removed because some of the bleeding may be coming from the relaxed lower uterine segment, (4) after replacement of an inverted uterus, (5) after evacuation of an hydatid mole, (6) when bleeding occurs during a vaginal examination to detect the presence of a placenta praevia. The latter is a vaginal pack and is used to control bleeding until a Cesarean section can be performed.

An intrauterine pack sometimes not only fails to stop bleeding but may be responsible for death by lending a false sense of security as a result of temporary cessation of the blood flow. A pack can prevent uterine contraction and retraction. It may also lead to infection. Ten yards of a 3 inch gauze tightly packed will absorb 1,000 cc. of blood. This is an important consideration.

If a pack is used and bleeding persists, the pack should be removed. Some authorities suggest that the uterine arteries may be ligated through the vagina, although this is a rather heroic procedure and dangerous because of the proximity of the uterus and urinary bladder. Abdominal hysterectomy is the last resort.

The patient who has experienced a postpartum hemorrhage should be treated according to the general physiologic principles which one would

employ for hemorrhage of any origin. Fluids should be instantly available on the delivery floor as should dried blood plasma which can be diluted quickly and used until whole matched blood is obtained. A well stocked blood bank is of course an ideal facility but since this is obviously not always possible emergency fluid and plasma set-ups should be maintained in good working order at all times. Good supportive treatment and extra nursing care should be as available to the occasional obstetric patient who needs them as to the patient undergoing major surgery. Antibiotic therapy following packing or unusual manipulation may prevent subsequent puerperal morbidity. In spite of alert observation one cannot always anticipate which patient may give trouble and the ability to act quickly may be invaluable.

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THE ADMINISTRATION OF THYROID IN GENERAL PRACTICE

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Much has been written about thyroid therapy. It is interesting to review the literature and compare past with modern concepts of treatment. As early as the sixth century the Chinese fed sheep thyroids to cretins. Little progress was made until 1869 when Curling reported the first two cases of sporadic cretinism. Soon thereafter Sir William Gull described adult myxedema which became known as Gull's disease. In the last thirty-five years much research has been carried out in thyroid diseases. It is not within the scope of this presentation to discuss fully the diseases of the thyroid gland but to discuss primarily the indications and contraindications of thyroid administration.

The indications for the administration of thyroid remains the same today as it was in 1891 when Murray injected thyroid extract for the treatment of hypothyroidism.[1] In spite of the fact that the chief indication for thyroid administration is clinical hypothyroidism, it has been arbitrarily employed in a great many other diseases.

Many internists and general practitioners cannot resist giving thyroid substance to help obese patients reduce. Rynearson and Gastineau have stated: "Fat comes from food, and obesity results from eating more than is required to meet the energy requirements of the body." Further, Hamblen has stated: "Incidentally, Notthaft's classical patient of 50 years ago, who manifested hyperthyroidism after taking 1,000 thyroid tablets in five weeks, was a young man who had been treated for obesity."[2] It should be clearly understood that thyroid medication has no place in the treatment of constitutional obesity.

Some textbooks on gynecology and obstetrics, and many practitioners in this field, are enthusiastic about the results obtained from the administration of thyroid. It should be emphasized that it is not a panacea to correct all functional disturbances of women. Furthermore, many dermatologists use thyroid empirically in the treatment of skin rashes characterized by dryness and, frequently, in adolescent acne. Rarely does the hormone produce any unusual therapeutic results except in conditions brought about by hypothyroidism.

The classification of hypothyroidism divides itself into four accepted categories, each representing a clinical variation. 1. Cretinism: (a) sporadic and (b) endemic. 2. Juvenile myxedema. 3. Adult myxedema. 4. Pituitary myxedema. Sporadic cretinism is rarely accompanied by goiter. It is due to atrophy or fibrosis of the thyroid gland. Endemic cretinism follows long standing iodine deficiency. Atrophy of the gland before maturity produces juvenile myxedema and results in an insufficient secretion of hormone in the youth. Adult myxedema results from either atrophy or fibrosis of the thyroid later in life causing failure of hormone production. Pituitary myxedema is caused by destruction of the pituitary gland and the resultant reduction in the output of thyroid stimulating hormone.

There is frequent misunderstanding as to the exact meaning of the term hypothyroidism. To establish a clear cut clinical diagnosis is indeed difficult at times. A low basal metabolic rate is accepted too frequently as meaning hypothyroidism. To depend upon a single basal metabolic study run by an inexperienced technician who does ten or less studies per month, must be looked upon with a good deal of suspicion, particularly when the value is not in agreement with the clinical manifestations of hypothyroidism. In such a situation the basal metabolic rate is misleading evidence and is worthless. Some physicians consider a low basal metabolic rate and an elevation of the blood cholesterol as a criteria to establish the diagnosis of hypothyroidism. Added to this should be determination of protein bound iodine, radioactive iodine uptake and clinical impression of the patient. Even with all this information at hand the clinician must be astute in making the diagnosis of hypothyroidism. It is not nearly so difficult to recognize myxedema as it is to recognize hypothyroidism without myxedema.

Serum protein bound iodine represents the

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Presented at the 94th Annual Session of the Missouri State Medical Association, March 30-April 2, 1952, St. Louis.

iodine of circulating thyroid hormone. It is recognized as being more significant than determination of blood iodine as the index to functional activity of the thyroid gland. This is a tedious procedure which is not readily available to many practicing physicians. There should be no administration of iodine preparations for three months before such estimations, to avoid falsely elevated values.[10] Mercurial diuretics will lower the value of protein bound iodine. The normal values in children vary from 3.5 to 7 gamma per cent, while for adults they are 4 to 8 gamma except in pregnancy, in which the range of values obtained without thyroid disease present, is 6 to 10 gamma. In hypothyroidism, values of 3 gamma are characteristic and, at times, they are less than 1 gamma per cent. There is no strict correlation between basal metabolic rate and serum protein bound iodine.

Excellent indications of thyroid function are uptake and excretion studies of radioactive iodine. In hyperthyroid patients the capacity of the thyroid gland to take up radioactive iodine is increased. The ability of the thyroid gland to take up orally administered dose of I^{131} can be calculated by measuring the accumulation of I^{131} in the gland with a Geiger-Muller counter. In hyperthyroidism the uptake by the thyroid gland of I^{131} is from 50 to 100 per cent and in myxedema it is less than 10 per cent of the dose.[9] There is some overlapping of these values in these conditions but in general the test is highly specific and diagnostic.

It should be pointed out that thyroid is the cheapest and most widely used hormone that is readily available. Likewise it is the most readily abused of the common hormone preparations.[7] Many pharmacists supply thyroid tablets to patients without proper authorization. Then, too, some physicians are careless in supervising patients who are under thyroid therapy. One of the greatest mistakes is the administration of thyroid when it is not indicated.

It sometimes is done by self-medication and by practitioners who are not fully aware of its indications and contraindications.

Moehlig has listed seventeen conditions in which he indicates that thyroid substance is of benefit.[3] Many of these disturbances occur in hypothyroidism and in the treatment of this clinical condition many of the symptoms of this disease will improve with thyroid medication. It is not uncommon to see psychogenic complaints and disturbances as part of the picture of hypothyroidism. This does not imply that all patients who are hypothyroid have functional complaints but, on the other hand, it is a rather common finding.

Perhaps the most common fallacy of thyroid therapy at the present time is the belief that the tolerance of a patient for thyroid substance is a measure of that individual's need for it. It is well known that the patient with adult myxedema is sensitive to thyroid and must be treated gradually so as not to upset his metabolism suddenly. The patient who has athyrosis rarely tolerates more than 2 to 3 grains of U.S.P. thyroid within a day's time. Only patients with normal thyroid glands are able to tolerate 5 to 10 grains of thyroid daily.

Vidgoff and Stampher write that Winkler, et. al. compared the response of nonmyxedematous and myxedematous subjects to orally administered dried thyroid.[4] They found that their nonmyxedematous subjects could tolerate as much as 6 grains of dried thyroid daily for long periods without effect on the basal metabolic rate or on the pulse rate. Farquarson and Squires observed the effect of prolonged administration of thyroid on a number of over-weight patients whose basal metabolic rates were either normal or slightly decreased. None of these patients were hypothyroid, nor were any greatly benefited. When the thyroid substance was given in relatively small doses, the basal metabolic rate rose but after a few months usually fell to the initial level. Each time the dose was increased there was a small rise in the basal metabolic rate followed by a decrease. They gave 2 to 3 grains daily and the limits were six months to two years.

Patients with thyroid addiction may be found to exhibit hypothyroidism when thyroid medication is discontinued. This results from physiologic depression of the gland's activity. If the patient is kept from taking thyroid medication, the metabolic values and thyroid function will return to normal in from two to three months time. Many patients become convinced that thyroid medication is necessary purely because they have a lowered metabolic rate. Too frequently thyroid is administered to these patients. When one discontinues the medication it is not uncommon for the patient to complain of tiredness, constipation, nervousness, loss of pep, abdominal bloating. A series of basal metabolic rates will show gradual decline, at least for the time being. Within a period of from six to eight weeks the physiologic function of the gland returns to normal, and the basal metabolic rate sustains this physiologic awakening. Therefore it should not be forgotten that there is an accumulative effect in thyroid therapy, and the hormone should be discontinued six to eight weeks before additional basal metabolic studies are done. It is not universally true that patients with myxedema will always require thyroid medication. Spontaneous remissions in this disease do occur, and they should not be overlooked. Thyroid medication should be discontinued periodically and spontaneous thyroid function revaluated from time to time.

A negative calcium balance may be established in obese children who have received thyroid medication over many months. More calcium is lost in the urine than is absorbed with the result there is a loss of lime from the skeleton. Should this

happen, curvature of the spine or other irreparable damage may result.

Experimentally Vidgoff and Stampher have shown that small doses of desiccated thyroid substance given sufficient time to exert an effect, initially, will cause a rise in the oxygen consumption rates of rabbits. On the other hand, when the oxygen consumption rates of normal growing rabbits are followed over a period of time, it is found that a gradual drop in the rate occurs.

It has long been known that the heart is affected in myxedema.[5] There is evidence of cardiac enlargement which results from loss of muscle tone and cardiac dilatation. Also there is a marked tendency to coronary arteriosclerosis in cases of long standing myxedema. Many of these patients have signs and symptoms of angina pectoris. The electrocardiogram, in a well established myxedema, shows flat, iso-electric or inverted T waves in one or more leads, and low voltage in the Q.R.S. complexes. These changes are usually reversible under treatment with thyroid medication.

Thyroid hormone is apparently a factor in the absorption of iron salts. A hypochromic, normocytic anemia which is refractory to the administration of iron suggests thyroid deficiency. Trial therapy with small doses of thyroid extract, combined with iron preparations, is entirely justifiable, even though the basal metabolic rate is normal.

Schlesinger and Fisher have mentioned delayed bone growth and dwarfed stature as characteristic of juvenile myxedema.[6] Both of these abnormalities can be corrected by adequate thyroid therapy, but if the dose is excessive or the treatment is given too long the correction proceeds too far. There is accelerated ossification with danger of early epiphyseal union bringing growth to a standstill. They recommend a radiologic examination every three to six months as well as height measurements. Then a ratio is worked out between these two factors since skeletal development is usually in advance of growth in these circumstances. Since this is rather cumbersome it is their opinion that repeated estimations of blood cholesterol and electrocardiography at regular intervals offer more information for determining thyroid dosage. On the other hand, this does not clearly indicate overdosage and it is here that radiography may be of value.

Ide has warned against the use of large doses of thyroid in the treatment of myxedema.[8] He reported a case of left hemiplegia which developed five days after the administration of 1 grain of desiccated thyroid daily. It is a well known fact that arteriosclerosis is a complication of myxedema, with the coronary arteries being a common site of this condition. The administration of thyroid to the myxedematous patient with this complication frequently brings on attacks of angina pectoris and may even produce coronary thrombosis unless the dosage is kept at a minimum. When a myxedematous patient is given large doses of thyroid it is not uncommon for him to experience generalized aching and soreness in the skeletal muscles. In fact the patient may complain that he feels worse than he did before therapy was instituted. Occasionally, nausea and fever develop.

Approximately one half of the patients suffering from adult myxedema exhibit achlorhydria. Since these patients do not have digestive tracts which permit normal absorption of the ingested thyroid, it is advisable for them to receive diluted hydrochloric acid along with thyroid medication.

SUMMARY

1. Thyroid is a potent hormone and its primary indication is the treatment of hypothyroidism.

2. A low basal metabolic rate is accepted too frequently as being infallible proof of hypothyroidism.

3. The patient's history, physical examination, basal metabolic rate, blood cholesterol, and whatever possible the serum protein-bound iodine and radioactive iodine uptake, should all be considered before diagnosing hypothyroidism.

4. Small initial doses of thyroid, varying from ¼ to 1 grain per day are sufficient in the treatment of cretinism and myxedema.

5. Larger doses may cause undesirable complications.

6. The physician should carefully supervise any patient receiving thyroid and should revaluate the patient's condition periodically.

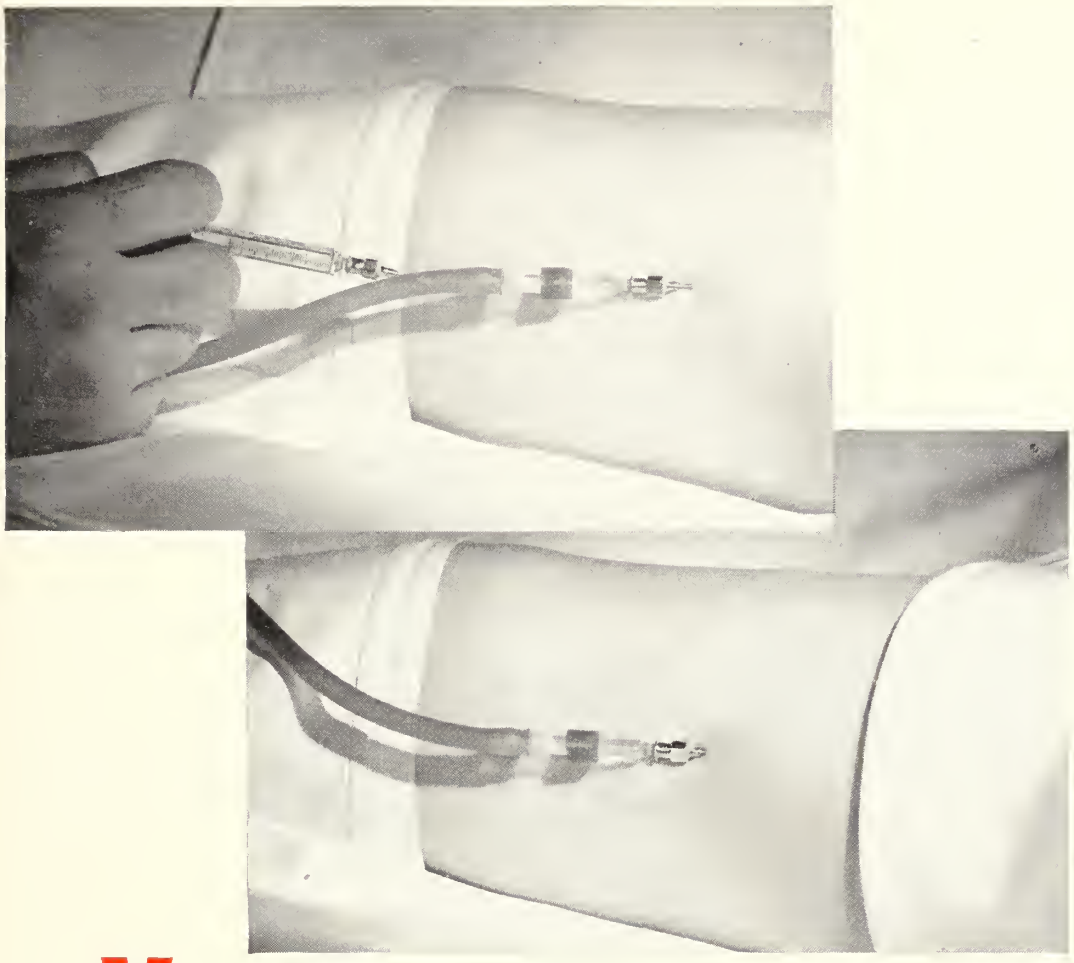
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Postgraduate Review

SOME USES OF THE MALE SEX HORMONES; AND CHORIONIC GONADATROPIN

DANIEL L. SEXTON, M.D.
ST. LOUIS

THE STORY of the isolation and synthesis of the male sex hormone is no less phenomenal that that of the female sex hormones. In 1850 Leydig first described the interstitial cells of the testis. In 1889 Brown-Sequard, then 72 years of age, reported beneficial effects following injection into himself of a crude testicular extract which he had prepared. Because of scientific shortcomings, his findings were ignored during his lifetime but now, in retrospect, scientists pay homage to his work. The first highly potent lipid testicular extract was prepared by McGee[1] in Koch's laboratory in 1927. From 1930 until 1937 Koch[2] and his group refined their methods of extracting urinary testicular androgen. In 1935 David[3] and his group in Laquerur's laboratory isolated crystalline testosterone from bulls' testes. In 1934 and 1935 Ruzicka[4] and his group synthesized androsterone and testosterone. From 1938 to 1943 important studies on the metabolism of androgens were carried on by Kenyon[5] and his associates. These, and numerous other contributors, have made possible the present day knowledge of the functions of male sex hormones and of their effect upon body health.

Testosterone, believed to be the natural androgenic hormone, is the only crystalline hormone to be isolated directly from the tissue of the testes. Androgenic substances have been isolated also from the adrenals. These compounds differ chemically from the estrogens in that they show a higher degree of saturation and possess an additional methyl group. Clinically, esters of the androgens (usually the propionate) seem more potent than the uncombined compounds.

PHYSIOLOGY

In the male there are two gonadotropins of pituitary origin; the luteinizing hormone (LH) which stimulates Leydig's cells to produce androgen and the follicle stimulating hormone (FSH) which stimulates spermatogenesis. Since the early animal experiments in which hypophysectomy was performed, it has been accepted that the pituitary regulates gonad development and function. For proper male development, there must be adequate pituitary stimulation and adequate responsiveness on the part of the testes to these stimuli. A failure in either will lead to gonadal deficiency.

Like estrogens, androgens act not merely as sex stimulants but in a general metabolic sense, influencing the function of all body tissues. Particularly striking are the effects upon skeletal and muscular development and upon the emotional status of the individual. Less conspicuous metabolic influences involve the retention of nitrogen, sodium and chlorides in the body. Castration of the male results in atrophy of the genitalia, loss of body and facial hair, general weakness, inability to concentrate, loss of memory, hot flashes and a variety of emotional disturbances.

Among other things, testosterone therapy is used in the male to promote growth of genitalia and of the prostatic gland, to effect an increase in the firmness of the musculature, to control skeletal development (prepubertal), to treat pituitary dwarfism and to enhance the development of secondary sex characters, i.e., distribution of hair, pitch of voice and general emotional reactions. In the female, testosterone may replace estrogen and progesterone therapy in the treatment of functional uterine bleeding, castration and the female climacteric when estrogens are contraindicated, or it may be used in combination with estrogens. It may be used in the treatment of metastatic lesions of carcinoma of the breast.

GONADAL DEFICIENCY

Gonadal deficiency primarily of pituitary origin may be the result of any one of several possible factors:

(A) Tumors of the anterior hypophysis which cause partial or complete destruction of glandular tissue, or cause reduced function as the result of intrasellar pressure are craniopharyngeal pouch cyst and chromophobe adenoma. Such tumors result in the failure of the pituitary to elaborate sufficient gonadotropins with the consequent clinical picture of infantile genitalia or hypogenitalia and absence or diminished secondary sex characteristics.

(B) Hypopituitarism not due to tumor. (1) The most common form of this deficiency is traceable to a deficiency in luteinizing hormone with consequent underdevelopment of the cells of Leydig. Though obesity does not necessarily accompany this deficiency, one may encounter the adiposo genital type.

(2) With deficiency of only the follicle stimulating hormone, there is an absence or diminution of sperm count while both primary and secondary sex characters remain well developed.

(3) Panhypopituitarism (Simmonds' disease) is a striking example of pituitary failure though it is uncommonly seen. In this condition, atrophy of the anterior pituitary with fibrous replacement accounts for a failure of all gonadotropin secretion. Symptoms are a combination of those found in (1) and (2) preceding, i.e., a deficiency in both Leydig cell and seminiferous elements.

Gonadal deficiency of direct gonadal origin is the result of a failure of the Leydig cells or of the seminiferous tubules or of both and may be

traced to an embryologic defect or to infection or injury of the testes. Such failure may be evinced as eunuchoidism in which there is a partial but definite reduction in gonadal development or as the rare eunuchism in which there is a complete absence of male characters.

The effects of gonadal deficiency upon the development of the individual depend upon the time of life when that deficiency first appears. Prepubertal hypogonadism results in poorly developed external genitalia and secondary sex characters. Should disease or injury bring on postpubertal hypogonadism, these characters are developed but diminished. Sex hormones also aid in the ossification of bone epiphyses so that the absence of the male hormone during the period of active growth would, in the presence of adequate amounts of growth hormone, result in an over-elongation of the long bones.

USES OF GONADOTROPINS AND TESTOSTERONE

1. Treatment of male gonadal disorders might, for convenience, be classified as follows:

A. To stimulate growth of Leydig's cells (chorionic gonadotropin): (1) cryptorchism, (2) delayed adolescence.

B. Replacement therapy with testosterone: (1) eunuchoidism, (2) male climacteric.

C. For its anabolic effect: (1) pituitary dwarfism.

2. Treatment of female disorders may be classified:

A. Menstrual disorders: (1) menorrhagia, (2) menopausal syndrome.

B. Cancer of the breast.

TYPES OF THERAPY

In the treatment of hypogonadism, the physician is confronted with the problem of whether to use stimulation therapy or whether to employ direct substitution therapy in the form of one of the available androgen preparations. Where stimulation therapy is indicated, pituitary gonadotropins would be desirable, were such available. In the absence of potent gonadotropins of this origin, the pituitary-like gonadotropin obtained from chorionic fluid may be employed to stimulate the interstitial cells of Leydig. There is no commercial preparation now available for the stimulation of the seminiferous tubules.

When substitution treatment is to be employed, preparations containing methyl testosterone or testosterone propionate are available. The details of treatment depend upon the degree of gonadal deficiency and upon the age of the individual. With boys, oral therapy is usually highly satisfactory, while in the adult large intramuscular doses may be necessary. In the boy or young adult, beneficial results may be anticipated from the daily administration of methyltestosterone tablets or sublingual tablets or testosterone propionate in buccal tablets. Treatment is interrupted and repeated as may seem desirable.

In the adult, oral therapy may be enhanced by injections of testosterone propionate, 25 to 50 mg, intramuscularly, two to three times a week. The implantation of pellets also may be employed. Two 75 mg. pellets of testosterone inserted in the subcutaneous tissue will maintain a patient for about ninety days who has first been primed with intramuscular therapy. During the male climacteric, trial oral therapy will suggest if such treatment will be beneficial.

Chorionic gonadotropin therapy is indicated in cryptorchism and delayed adolescence. Chorionic gonadotropin possesses predominantly luteinizing properties. It is secreted by the choroid-placenta system and not by the pituitary.

FORMS OF TESTOSTERONE

Forms of testosterone available and trade names are:

For injection:

1. Testosterone propionate in oil, 5 to 50 mg. per cc., Metandren, Neo-Hombreal, Oreton, Perandren, Testosterone Propionate.

2. Testosterone aqueous suspension, 25 to 50 mg. per cc.

3. Testosterone cyclopentylpropionate in oil, 25 to 100 mg. per cc.

1. Methyltestosterone, (a) tablets, 10 to 25 mg., Metandren, Oreton-M, (b) sublingual tablets, 5 to 10 mg.

2. Testosterone propionate, (a) buccal tablets, 2.5 to 5 mg.

For oral use:

For implantation:

1. Testosterone Pellets—Oreton F, 75 mg. each.

Some trade names of chorionic gonadotropin are: A. P. L., Antuitrin-S, Chorionic Gonadotropin, Follutein, Prantueon, Pregnyl, 500 and 1,000 units per cc.

TREATMENT: A. STIMULATE GROWTH OF LEYDIG'S CELLS

Cryptorchism.—Some believe that adolescence corrects cryptorchism and that, failing such natural correction by the fifteenth year or even later, surgery must be employed. This, to me, is a negativistic approach for most cryptorchid boys show juvenile hypogonadism that would be more benefited by an early adolescence than by a delayed one. Since there are variations in types of cryptorchism, no general rules of treatment can be laid down.

First of all, one must make certain that actual cryptorchism exists for in many instances in which there is no true cryptorchism, nervousness at the time of examination will cause the testes to retract. To exclude this possibility the patient must be examined several times. When the scrotum is well developed, it is probable that the testes have actually descended.

It is best not to treat cryptorchism in boys less than 10 years of age for before that age response is slow and disappointing. In those older than 10,

chorionic gonadotropin, 500 to 1,000 international units, injected two to three times weekly until a total of 10,000 to 12,000 units have been administered, will usually foretell the final outcome of treatment. When results are encouraging but not completely satisfactory, a rest period of three months may be followed by another series of treatments. This, if incomplete improvement is again noted, may be repeated after another three months' rest.

Testes not palpable along the inguinal canal are least likely to respond to therapy while a small testis palpable in the inguinal canal is most likely to respond. A testicle of near normal size along the canal is probably fixed by adhesions or embedment in fat. In such a case surgery should be resorted to without delay.

When chorionic gonadotropin therapy has failed, surgical exploration is warranted though its results are often disappointing. If there is a hernia, repair and orchidopexy should be performed simultaneously. In such a case previous chorionic gonadotropin therapy may, by causing an increase in the size of the testicle, facilitate surgical procedure.

Delayed adolescence.—When adolescence is delayed, chorionic gonadotropin, 500 to 1,000 units two to three times weekly until 20,000 units have been injected, should first be tried. Like delayed testicular descent, delayed adolescence is frequently accompanied by undesirable psychologic traits which maturation at the normal time would help to alleviate. If stimulation with chorionic gonadotropin alone proves ineffective, the addition of methyl testosterone, 5 to 10 mg. as sublingual tablets, or testosterone propionate in buccal tablets, 2.5 to 5 mg., daily for thirty days and repeated later if necessary, will hasten masculinization with accompanying improvement in weight distribution.

Eunuchoidism.—Eunuchoidism may be primary, i.e., due to hypophyseal failure or to an embryonic testicular defect or, secondary, as the result of surgical removal of the testes, atrophy following infection or injury to the testes. Whatever the cause, eunuchoidism responds to male hormone therapy. Though atrophy of the testes is an irreversible process, the penis and secondary sex characters show remarkable development following treatment. The extent of improvement is dependent upon the age at which the therapy is undertaken; those at puberty showing a more striking improvement than those in early adult life and far more so than older eunuchoid persons. Treatment is accompanied by improved libido and potentia as well as changes in the psyche and emotions as shown by an increased confidence and aggressiveness and the development of masculine traits.

Effective treatment requires the administration of adequate amounts of hormones. In the beginning, at least, it is necessary to inject testosterone propionate. A dosage of 50 mg. two to three times weekly for ten to fifteen weeks will usually suffice to obtain optimal improvement. Thereafter methyl testosterone orally, 25 mg. daily, or implants of testosterone pellets, two 75 mg. pellets every ninety days, will maintain the patient. During periods of stress maintenance treatment may be supplemented with injections of testosterone propionate, 50 mg., once to twice weekly. It should be remembered that testosterone is a substitution therapy which must be continued indefinitely.

Male climacteric.—It is now generally agreed that decreasing testicular function, associated with normal aging, is often accompanied by general and neurovegetative signs and symptoms. Complaints most often elicited are fatigue, poor concentration, reduced memory, procrastination and indecision, irritability, nervousness signifying heightened nervous tension, melancholia or depression, somnolence, day-dreaming and disturbed night sleep. In almost every instance these symptoms, when caused by testicular deficiency, are alleviated by testosterone therapy.

It should be pointed out that not all complaints occuring during the latter years of middle age are due to testicular deficiency, and the number of patients with these complaints is relatively small. Impotence in sexually normal men between the ages of 35 to 50 years is frequently the effect of physical and mental fatigue, or of psychic trauma, and is sometimes corrected by psychosomatic adjustment and elimination of external (environmental) causative factors. Testosterone is rarely effective in these patients and its indiscriminate use results only in disappointment. The oral administration of 25 mg. of methyl testosterone daily for a thirty day period will afford sufficient therapeutic trial. If there is no alleviation of symptoms at the end of this period it is unlikely that testicular deficiency is the basic cause of the complaints. Oral therapy alone may suffice or may have to be enhanced by the addition of testosterone propionate, 50 mg. once or twice weekly, or testosterone cyclopentylpropionate, 100 mg. weekly injected intramuscularly. A sense of well-being follows testosterone therapy and the patient usually feels the value of treatment sufficiently to be the judge of its effectiveness. The indiscriminate use of testosterone in middle aged men is unwise and should be avoided. Any evidence of prostatic cancer is a contraindication to its use.

Pituitary dwarfism.—In the prepubertal treatment of dwarfism, the male sex hormone, while not a true growth hormone, is the most effective hormone available for bringing about an increase in statural and muscular growth. Through increased retention of nitrogen, sodium, chlorides and phosphorus, weight is increased and general improvement ensues. All body cells are influenced by this hormone. It has been claimed that a statural growth such as comes naturally with the adolescent spurt follows male hormone therapy.

Methyl testosterone, 5 to 10 mg., orally or sublingually or testosterone propionate buccal tablets, 2.5 mg., for periods of from thirty to sixty days, alternating with rest periods of similar length, may be continued from one to three years. Excessive stimulation of genital growth must be avoided through repeated observation and control of dosage. This plan of treatment is applicable to both sexes when properly employed.

USES OF ANDROGENS IN THE FEMALE

Testosterone may be employed to great advantage in certain female patients. Dosages must be restricted if masculinization is to be avoided though usually it is not necessary to employ sufficiently large doses. Masculine changes are largely reversible though the deepened voice may never entirely revert to normal.

Excessive menstrual bleeding of functional origin can usually be checked by testosterone propionate, 100 mg., injected intramuscularly daily for three or four days. In unusual menopausal problems, 25 to 50 mg. testosterone propionate once to twice weekly during the intermenstrual period may prove effective when all other treatment has failed. This has been observed particularly when psychotic tendencies existed.

The hormonal status of cancer of the breast is analogous to that of cancer of the prostate though the improvement following glandular therapy of breast cancer is less striking than that following glandular therapy for cancer of the prostate. Testosterone propionate, 100 mg., three times weekly over a prolonged period will give temporary relief from certain metastatic lesions of cancer of the breast. It may be necessary to give a total of as much as 3,000 mg. before benefits can be noted. After initial improvement, most patients die of cancer of the breast. Masculinization accompanying androgen therapy can be tolerated in such cases providing the symptoms of cancer are ameliorated and life expectancy even somewhat increased.

CONTRAINDICATIONS FOR THE USE OF ANDROGENS

The contraindications for the use of androgens are few. In older men in whom cancer of the prostate is a potentiality, androgens should be used carefully. When they are used in the prepuberal dwarf, dosage should be adjusted so as not to produce priapism or sexual overstimulation. The promiscuous use of androgens in middle aged men with complaints of functional origin is to be avoided.

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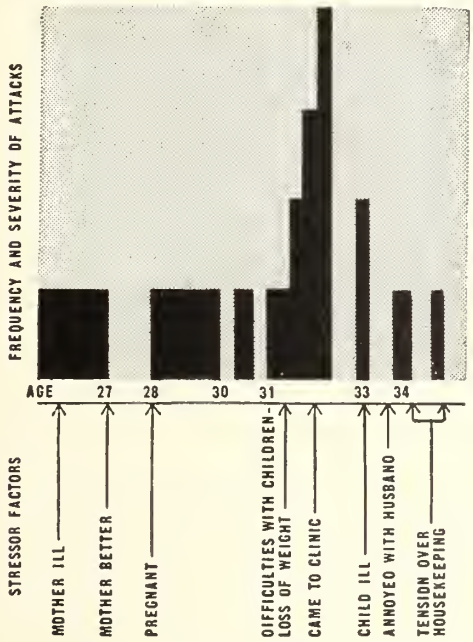
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HEALTH INSURANCE

Can the federal government purchase health insurance from private carriers? Both Frank Dickinson, Ph.D., American Medical Association economist, and Wendell Milliman, independent actuary, have pointed out that the moment the federal government becomes an insured of a private insurance company, it makes the sovereign power of government subservient to a private business institution. This creates a relationship contrary to public policy. This question is one of the most important and complex which must be considered by the medical profession.

Stress . . .

Stressor factors which evoke autonomic responses occur often in our civilization. They are not always of external origin, frequently, stress springs from the "well of uncertainties, the fears, the angers, and the hostilities that an inadequate childhood nurtures in troubled people in a troubled world." [1]



After: Relationship Between Life Stress And Symptoms — Stevenson, I.: G.P. *4*: 67 (Dec.) 1951

When emotions aroused by these stresses are not dissipated in appropriate biological behavior, heightened autonomic impulses beat against a "moored" physique.[1]

Incessant "emotional buffeting" impinged on labile autonomic pathways is likely to produce deviations from normal body function and *a rash of symptoms.* In such cases, both branches of the autonomic nervous system are involved. For symptomatic relief oral administration of cholinergic and adrenergic blocking agents and central sedation has proven successful. Drugs effective for the several actions respectively are: belladonna alkaloids, ergotamine tartrate and phenobarbital. These drugs may be used individually or in combination,* as required by the individual case, to effect more stable function of the autonomic nervous system, thereby "dampening" overactivity of the involved organ systems.

* Dosage of each ingredient adjusted to the needs of the particular patient.

[1] *Cleghorn, R. A. and Graham, B. F.: Recent Progress in Hormone Research, Vol. IV, New York, Academic Press, Inc., 1949, p. 323.*

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Clinical Conference

GYNECOLOGIC PATHOLOGY SEMINAR

F. C. HELWIG, M.D.
KANSAS CITY
Conductor

THE CASES selected for this seminar on gynecologic pathology were chosen particularly for their general interest and not, except in a few instances, because they presented diagnostic problems. All of them, whether diagnostic problems or not, have many associated ramifications which may serve to bring out certain important differences of opinion regarding histogenesis, management and prognosis. Therefore, I hope that some of the points considered in this discussion will prove of benefit.

Case 1. Carcinoma in Situ of Vulva, Perineum and Vagina. (Submitted by Kansas City General Hospital No. 1, Kansas City, Missouri.)

History.—The patient was a married white female, aged 31. Four years prior to admission she noticed a perineal and vulvar pruritus which persisted, becoming more severe in the last six months. The patient was six months pregnant. Vulva and perineum showed large, flat, moist patches around the vaginal orifices and rectum. The vaginal mucosa was moderately thickened with extension of warty growths into the vagina. The cervix was soft and bluish with a white discharge. Serology and Frei tests were normal.

The perineal lesion was biopsied at the time of delivery in September 1950. In November 1950, the lesion had extended, completely surrounding the anus, labia majora and labia minora and into the vaginal vault. Two months after delivery, a vulvectomy was performed. All admissions and biopsies revealed essentially the same picture.

DISCUSSION

DR. HELWIG: I consider this a case of carcinoma in situ. One may see from the sections that some of the zones are frankly atypical whereas others appear to be nothing but simple hyperplasia. Moreover, in the oil immersion preparation, it is possible to see prickles even in some of the more atypical zones. There were numerous biopsies on this patient and varying degrees of hyperplasia and atypical growth without malignant invasion were encountered in most of the sections.

I recently studied a similar case of atypia in the vagina and cervix wherein half of the vaginal lesion involuted following painting with a solution of podophyllin. This lesion was repeatedly biopsied and areas of the cervix showed frank invasive carcinoma, whereas none of the vaginal lesions showed anything but *in situ* atypia. I think the remarkable involution under treatment with podophyllin makes one question the malignancy of the vaginal area.

There has been so much controversy about these *in situ* malignancies that there does not seem to be a definite meeting of minds on management, and this also brings up the question of exfoliative cytology.

I, for one, am strongly averse to any major procedures without biopsy confirmation, together with full clinical data, particularly the question of pregnancy. Even in the presence of positive *in situ* malignancy in the biopsy specimen, and considering the possibility of other foci which might show invasive carcinoma, irradiation or major surgery on these women, particularly the young ones, should be approached with extreme caution.

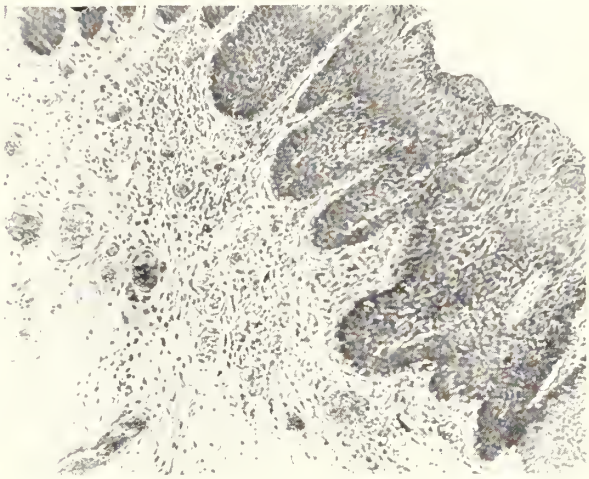


Fig. 1. Photomicrograph of area of in situ carcinoma which involved the vulva, perineum and vagina.

Case 2. Malignant Melanoma of the Vulva. (Submitted by the University of Kansas Medical Center, Kansas City, Kansas.)

History.—The patient was a 70 year old, white female, attended at the University of Kansas Medical Center, with a six month history of itching, pain and burning of the vulva. There was a history of operation in 1942 for a malignancy near the uterus. This record is not available. Physical examination disclosed a firm pedunculated lesion of the right vulva, which was slightly indurated.

Laboratory examination was noncontributory.

The excised specimen consisted of a nodular, ulcerated lesion measuring 2.5 cm. in diameter. It extended into the subcutaneous tissue for 1 cm. Vulvectomy was done.

DISCUSSION

DR. HELWIG: High and low power photomicrographs are shown of sections from the benign junctional nevus on one side of the vulva. The following slides are from the malignant areas on the other side of the vulva. All the latter show

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Presented at a joint meeting of the South Central Region, College of American Pathologists, and the Missouri Society of Pathologists at the University of Kansas School of Medicine on April 21, 22, 1951.

Clinical Professor of Pathology and Oncology, University of Kansas School of Medicine.

invasive penetration by atypical cells, many heavily laden with melanin pigment. These sections are all fairly classical, I think.

The question of origin of these tumors was thoroughly studied in the early 1920's by Dawson and Nicholson. Furthermore, I am sure everyone is quite familiar with Dr. A. C. Allen's article in *CANCER.*[1] He states, and I think correctly perhaps, that most of the malignant melanomas, and perhaps all of them, may spring from these junctional nevi. I feel quite sure, however, that I could get a majority of pathologists here

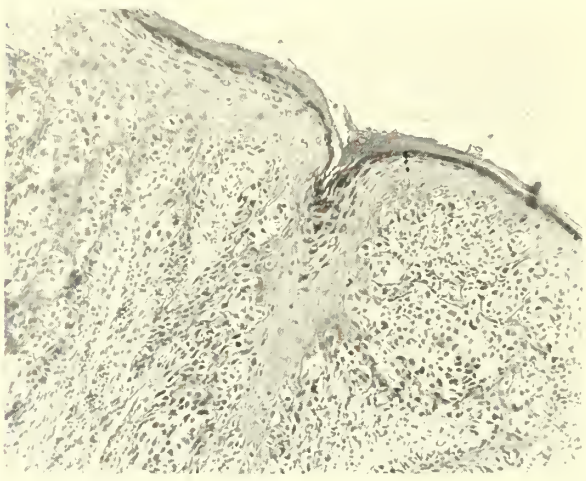


Fig. 2. Photomicrograph showing malignant activity in junctional nevus.

who believe that probably once or twice in their lives they have seen malignant changes taking place in the so-called "perfectly innocent, benign, dermal nevi. . . ."

Another case was a young man, 26 years of age, whose mother was a Red Cross worker in a hospital. She was disease-conscious and the son had a mole on the side of his face which was getting larger and browner. It was semipedunculated and he asked to have it removed. The pattern was one of semi-innocence, except, under higher power, many cells showed considerable nuclear atypia, and I was apprehensive about it. Sections were made far and wide in an attempt to see whether there might be a single, miniature focus of junctional change, but none was found. I thought we should follow this fellow with great care because his lesion showed histologic malignancy. He came in every two or three months and nothing showed up. At the end of eighteen months he returned for another check-up, and a little node was found in the neck, just below the angle of the jaw. It was small, but was removed.

The slide shows a spindleform metastasis with many heavily pigmented cells. Now, it is true that one swallow does not make a summer, but I would be willing to make a bet that many have seen similar instances. I do not want to get into the controversy regarding the background of these tumors, of whether or not all the malignancies arise from the epidermal elements, but I would like to call your attention to certain things which have been observed regarding the neurogenic background of these pigmented lesions. The *cafe-au-lait* spots of Von Recklinghausen's disease occur not only with Von Recklinghausen's disease but also with a wide variety of peculiar and interesting abnormalities, such as a recent case of pseudoarthrosis combined with Recklinghausen's disease and *cafe-au-lait* spots. Not too long ago I saw *cafe-au-lait* spots combined with spondylolisthesis. Sometimes one finds them in the presence of multiple, symmetrical, painful and nonpainful lipomata. Furthermore, there is a condition known as nevus unis lateralis in which the nevi tend to follow the course of peripheral nerves, and these nevi show a warty, hyperplastic, epithelial overgrowth suggesting a possible nerve influence on the epithelial hyperplasia. Oftentimes, these nondeeply pigmented, nonhairy nevi will show a marked number of nerve elements. There is a certain type of fish which has a change in color at the mating season; when the intermediate lobe of the hypophysis is removed, the fish fail to undergo this change. There has been some work done on the nerve endings in the buccal mucosal border pigment spots of the alligator; and it is known that one can, by planting the cells from the neural crest into the wing bud of the chick embryo, produce changes in color of the wing feathers. So, there is a well known association of nerve and melanin pigment. Ewing and others have long maintained the neurogenic background of these tumors. What is the trigger mechanism which sets off malignancy? Cauterization, electrocoagulation and caustics have all been blamed. Often the patient goes to the doctor to have something done about his mole because of some minor change which calls his attention to it, and the lesion is found to be malignant.

This next slide is from the scrotum of a 16 months old baby who had a small black mole on his scrotum since birth. It was removed and found to be histologically malignant. This interesting group of juvenile melanomas, which occur about equally in both sexes, shows slow or sometimes rapid growth. They are usually hairless and rarely are ulcerated. Microscopically, the section shows nuclear variation, changes in cell type and mitotic figures. This group of tumors deserves special consideration because, histologically, they are often frankly malignant. However, clinically, these tumors practically never show metastasis until after puberty, at which time they may undergo rapid growth and metastasize widely. This is particularly true of those on the soles of the feet, under the nails and on the genitalia. The extreme importance of knowing the age of

1. Allen, A. C.: Cancer 2:28 (January) 1949.

the patient in such clinically benign, but microscopically malignant, lesions needs no further comment.

Case 3. Squamous Cell Carcinoma of the Cervix of Twenty Years' Duration. (Submitted by the University of Kansas Medical Center, Kansas City, Kansas.)

History.—A 34 year old Negro female entered the clinic in 1928 with a complaint of intermenstrual bleeding and menorrhagia of six months duration. Biopsy was taken but no treatment given. Slide is from this material.

She was biopsied at various times without therapy until 1947, when 4600 r. radium was given. On September 17, because of the enlarged abdomen and pressure symptoms, a hysterectomy was performed. The uterus weighed 450 grams and was lobulated. A cervix, as such, or carcinoma was not recognized. However, a small os was seen. The patient developed an abscess and generalized peritonitis and died on September 28, 1948.

Diagnoses.—Squamous (epidermoid, prickle cell) carcinoma 9; spindle cell carcinoma 1, atypical endometrial stromal hyperplasia with endometritis 1.

DISCUSSION

DR. HELWIG: My diagnosis in this case was squamous cell carcinoma, grade III, of the cervix. The most important reason for demonstrating this remarkable case is its long duration without treatment. The first diagnosis in 1928, by Dr. Wahl, was squamous cell carcinoma of the cervix and I think most will agree with that diagnosis. In 1930, another biopsy was squamous eell carcinoma and the last biopsy is illustrated by this slide. This is an undifferentiated spindle form carcinoma of the cervix. A section, taken from the operative specimens, under higher magnification, shows these spindle form epithelial cells lying in hyaline, irradiated stroma.

Some workers have maintained that from the first clinical evidence of cervical cancer, the chances for cure decrease at the rate of 3 per cent a week. I only wish to comment that there are over a thousand weeks in twenty years.

In 1937, a surgeon friend of mine presented me with a handful of coal black glands from an axilla. The patient had had an eye removed for acute glaucoma in 1915. The oculist fortunately had a beautiful section made by Dr. Finoff in Denver and, except for fading, my sections of the gland and the oculist's slide were dead ringers. She was dead from widespread visceral metastasis in six weeks. Yet, for twenty-two years she had been hale and hearty. What were these malignant melanoma cells doing all that time?

I am going to ask Dr. Harold L. Stewart to tell us something about some of the fine things that they are doing at Bethesda, in their chemical attack on cancer.

(Dr. Stewart concurred in the diagnosis in this case and followed with an interesting discussion of other cases showing a long interval, similar to the case under discussion. He also touched on the problem of carcinoma *in situ*, and then commented on some of the chemotherapeutic work being done at Bethesda, and the problem this type of case raises when an attempt is made to statistically analyze a series of cases, either clinical or experimental.)

Question: If this cancer had been graded, how would you have graded it at that time?

DR. HELWIG: It was graded III, and I think I would grade it III. Grading is possibly not as applicable in cancer of the cervix as in some other locations. Randall and others have made some

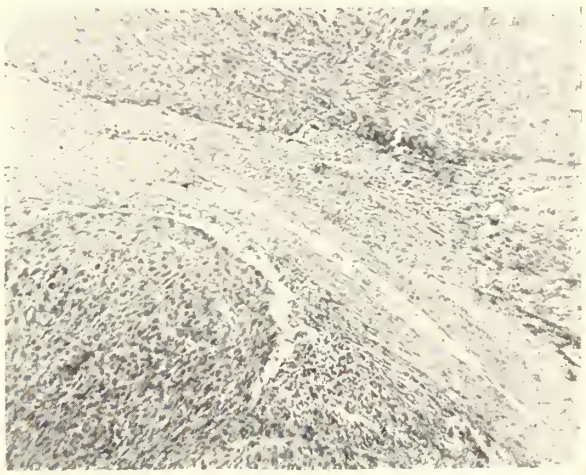


Fig. 3. Photomicrograph showing spindle form type of squamous cell carcinoma, grade III, of the cervix.

rather interesting observations on the relationship of grading to prognosis and growth rate; they think the association is not striking. Of course, this brings in, I think, an important problem. These patients all receive a gigantic dose of local blasting radium to a small area which gives no fair chance to determine anything about relative radiosensitivity, resistance or responsiveness, so to speak. As far as I know, no good statistics have been compiled, with the exception of those of Dr. Stewart's, using external radiation to see what the different cell types would respond to. It seems that the cell type is apparently not so important as the gross character of the lesion. The everters respond much more readily than the inverters, and one should, I suppose, imagine that to start with. I do not know, from this description, whether this tumor was an inverter or an everter, but certainly it is anaplastic as far as the cytology goes.

Case 4. Hemangioendothelioma of the Cervix. (Submitted by Dr. Richard Johnson, Ellis Fischel State Cancer Hospital, Columbia, Missouri.)

History.—This 70 year old white female had a "fallen womb" of ten years duration. There was minimal vaginal bleeding for the last two months and intermittent back pain in the lower dorsal and lumbar regions. She had seven normal pregnancies and spontaneous menopause at age 40.

Physical examination revealed complete procidentia

with cystocele and rectocele and a superficial ulceration on the cervix, 1.5 cm. in diameter. There was no induration. The uterus was normal in size. There was hypertension and an apparently old compression fracture of T-12 and L-3. Vaginal panhysterectomy was done following a biopsy which revealed neoplasia.

The patient died eleven months after operation. The diagnosis was cerebrovascular accident. There

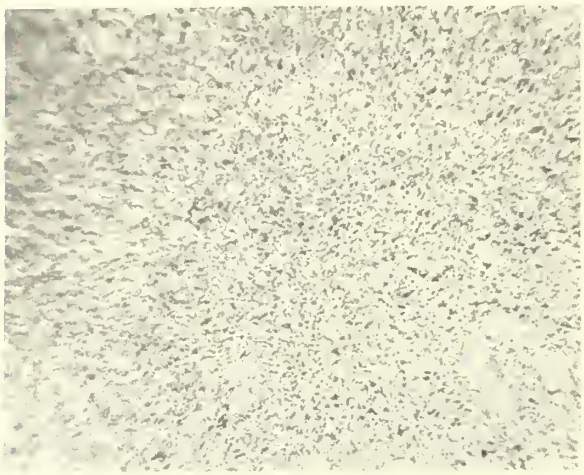


Fig. 4. Photomicrograph of cellular hemangio-endothelioma of the cervix.

was no evidence of recurrent tumor, but patient was not autopsied.

Diagnoses.—Squamous cell carcinoma (undifferentiated) 5, unclassified tumor of cervix 1, malignant tumor of uterus 1, lymphoma 1, plasmacytoma 1, large round cell sarcoma (plasma cells present) 1, mesothelioma 1, inflammatory 1.

DISCUSSION

Dr. Helwig: This case is really a tough specimen for diagnosis and when I contemplate the diagnoses listed I can hardly disagree with any of them. However, my own diagnosis is hemangioendothelioma or highly anaplastic squamous cell carcinoma. The first diagnosis I will try to substantiate largely on its high magnification features.

This first slide impresses me with its peculiar vascular pattern and the sharp border of the lesion which, I think, is in favor of a new growth. These miniature vascular channels appear to me to be lined by atypical cells; and although there are many plasma cells present, they impress me as reactive rather than as a part of the growth *per se*. Furthermore, the sharp border of the ulcer without downgrowth of acanthotic epiderm is in favor of neoplasia. Moreover, I think many will agree that these cells are atypical and are not to be found in simple inflammatory plasma cell granulation tissue. The importance of this growth is not so much the puzzling tumor, if such it be, but rather the relationship of keratinized portio epithelium in procidentia and the striking infrequency of carcinoma in such cervices.

Some years ago, one gynecologist sent out a questionnaire to a large number of gynecologists and general surgeons. Of those who answered his questionnaire, 58 per cent had never seen a case of squamous cell carcinoma in a procidential cervix. Judd, in his enormous surgical material (2,000 and some cases of hysterectomy for procidentia) saw only three cases, a percentage of .014. In the group of surgeons who were sent the questionnaire, few had seen more than one case, and I think only one or two had seen two cases.

Now, what is this strange business about the protection of the keratinized cervix against cancer? If one gets a keratosis of his lip, one worries about it for fear he will develop an epithelioma; but a keratosis on the cervix—that is the exact opposite—let it hang out, that will protect it. There have been several interesting explanations devised for this apparent paradox. One holds that the cervix of procidentia is much freer of infection, that the cornification is a protection against subsequent epitheliomatous transformation, in contradistinction to cornification of the other mucous membranes. Furthermore, one often sees an old chronic pressure ulcer; is that protection? The cervix is certainly the seat of chronic irritation. This reases the question, does irritation have anything to do with cancer. If so, irritation prolonged enough to produce a pressure ulcer, one would think, might be of some etiologic significance. Another explanation is that blood supply is decreased in procidentia. Another holds that women with procidentia come to the doctor earlier than the average case of cancer of the cervix. I do not believe that. I have seen many such patients and have wondered how in the world they ever stood it for fifteen or twenty years. This patient went ten years before operation. Then, they say that this procidential cervix occurs in an older group of women, and that they are out of the cervical cancer age. Now you see, after all this testimony, people are employing the same argument to prove it does or it does not do this or that. I have not the remotest conception, naturally, regarding the particular protective mechanism against cancer of fresh air on mucous membrane with keratinization, but the figures cannot be gainsaid. I would like to have some comments from some of the men here if they have seen many cases or have any ideas on the subject.

Dr. Bennett: I would like to ask what diagnosis was made on this patient at the State Cancer Hospital.

Dr. Schenken: The diagnosis was the second one on the screen—unclassified tumor of the cervix.

Question: Was a bone marrow done?

Dr. Johnson: Yes, the bone marrow was normal; the peripheral blood was normal. The radiologist was certain that the lesions of the vertebrae were of much older vintage and were traumatic. There did not seem to be any other suitable

way of handling this case because the only evidence of tumor was in the benign appearing cervical erosion. It is the only case in our files in which a tumor of the cervix is associated with complete procidentia.

Case 5.—Cylindroma of the Cervix. (Submitted by St. Joseph Hospital, Kansas City, Missouri.)

History.—White female, aged 79, had had two or three days vaginal bleeding three weeks before admission. "Fibroids" (?) removed from uterus 14 years previous. Gelfoam biopsy made from vaginal secretion, accompanied specimen. Vaginal examination revealed a large, nodular, hard mass; "feels like CA, and surgical removal is impossible."

Consultation with proctologist revealed a well fixed mass with involvement of the upper 3 cm. at the posterior vaginal wall; no involvement of rectal mucosa. The mass undoubtedly involved the upper portion of the rectal-vaginal septum. Following biopsy, the patient was treated with external radiation, 1480 mg. hours to the cervix, and 2400 r to each of 4 ports.

The last follow-up was on February 1, 1951 and the condition was excellent. No tumor mass was palpable.

Diagnoses.—Struma ovarii (teratoma with thyroid elements) 3, papillary carcinoma of thyroid 1, ovarian adenocarcinoma 1, adenocarcinoma of the sweat gland 2, papillary carcinoma (Gaertner's duct origin) 1, carcinoma of mucous gland 1, adenocarcinoma of the cervix 1, cylindroma 1.

DISCUSSION

DR. HELWIG: My diagnosis on this case is cylindroma. Apparently I have only one supporter. It is important, I think, in this case to establish positively the primary origin of this growth and Dr. Kerr, who kindly furnished this unique section, assures me that it sprang primarily from the cervix with secondary local invasion.

The first section I show here is a beautiful example of what can be done with the Gladstone sponge technic. I have not had as much luck with this method as others and, frankly, I am partial to the Ayre spatula. The pattern of this tumor, I think some may agree, is reminiscent of a salivary gland neoplasm. I have made a diagnosis of cylindromatous mixed tumor and I must confess that it takes a lot of gall for me to make such a diagnosis since there is only one other such case on record. This case was described by Paalman and Councilor last year and was found in conjunction with a case of *in situ* carcinoma of a procidentia cervix. Their case looks much like this and perhaps I was overly impressed with their report. Before I knew of their report, I searched the literature, after having made this almost impossible diagnosis, and I found only this one report. Of course, their case might not be a cylindroma either. Because of the rarity, I began seeking for other possible bizarre areas where these tumors have been recorded, and I found one in the vulva. That proved encouraging. All have seen such growths of the bronchus and trachea which somewhat resemble this case.

This next slide again presents a pattern which resembles somewhat a cylindromatous mixed tumor. I am not going to dwell on the histogenesis or any of the other features of this group of tumors but will leave that up to a man who has made a special study. Dr. French, will you carry on?

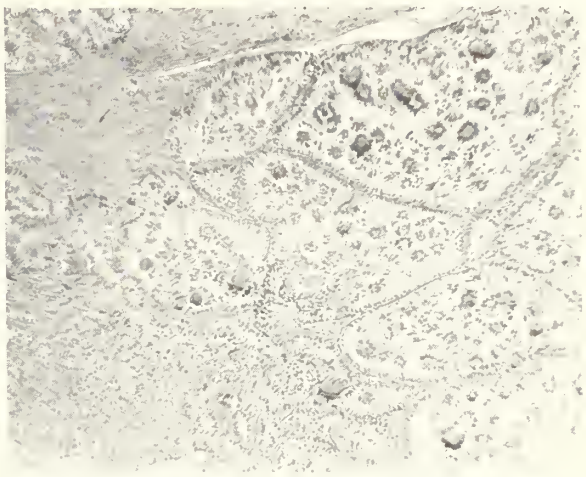


Fig. 5. Photomicrograph showing cylindromatous mixed tumor of the cervix.

(Dr. A. D. French, University of Michigan, concurred in the diagnosis of cylindroma or mixed tumor and stated that he preferred to call these growths pseudoadenomatous basal cell carcinoma and attributed their origin to mucous glands. He also discussed some of the developmental factors in the origin of these tumors and made other suitable comments regarding this group of tumors as a whole.)

Case 6. Fibromyosis Uteri (Submitted by Dr. J. H. Hill, Trinity Lutheran Hospital, Kansas City, Missouri).

History.—The patient was a white female, aged 46. Chief complaint was profuse menstrual bleeding and a lump in the lower part of the abdomen. Menorrhagia began seven months before admission and became progressively more severe. One month before admission severe abdominal pain, described by the patient as "green apple belly ache," was noted. The mass in the lower abdomen was noted at that time. She had three children, ages 18 to 23.

Physical examination revealed a firm, movable, nontender mass about the size of a grapefruit, with the upper surface half way between the symphysis pubis and the umbilicus.

Laboratory examinations showed a secondary anemia.

The gross specimen revealed a spherical uterine tumor, 12 cm. in diameter. The uterine cavity was small and deflected far to one side by the tumor-like growth which consisted of muscle bundles enclosing islands of pale, soft, cellular, tissue, which bulged on cut surface after fixation.

Diagnoses.—Stromal endometriosis (adenomyosis)

4, sarcoma of endometrial stroma 3, sarcoma of myometrium 1, fibrosarcoma 1, sarcoma 1.

DISCUSSION

Dr. Helwig: After studying this case with differential stains, and a large number of sections, I can only agree with Dr. Hill's diagnosis. This case was published in the *Archives of Pathology*[2] and all information that I have on the



Fig. 6. Photomicrograph showing fibromyosis uteri with endolymphatic extension.

case is due largely to Dr. Hill's hard work. My diagnosis is the same; namely, fibromyosis uteri, the so-called endometrial type in which no glands are present. In one zone of this uterus, entirely separate from the main tumor, endometriosis with glands was found. This tumor was a large grapefruit size growth, not the "boarding-house" type, but larger. We searched through many sections diligently, and Dr. Cox and Dr. Bridgens also searched. They wanted to find a gland, any kind of a gland, but I am not sold completely that they have found one. A study of these little vessels, arterioles almost, shows a nice collar of reticulum; and in many respects, they closely imitate at least the architecture of the spiral arteries of the endometrium. Incidentally, I might mention, and I do not believe this is incorporated in your protocol, the endometrium was in a secretory phase. There are no ovaries for study here, so that is a mild handicap. But here in a slide are the bundles of myometrium, sometimes hyperplastic and sometimes mildly hypertropic, with extensions of what looks like proliferative endometrial stroma coursing throughout. There have been quite a series of these cases recorded. I think the first was reported about thirty years ago.

This slide shows another interesting feature of the growth; that is the endolymphatic extension. I can again point out tiny spiral arteries. A higher magnification of this area shows the arteriole and endolymphatic extension.

I am not here to beg for any one method of extension of adenomyosis or endometriosis. I was surprised last week when an outstanding chest surgeon came to me and said he had a patient who developed a pneumothorax every time she menstruated, and had I ever heard of a pleural endometrial implant. I knew that some years before the war some chap had produced ectopic endometriosis in a rabbit's lung by intravenous injections, and I had read of a case of ectopic endometriosis of the arm and one of the lung, but the pleura—no. Whenever I get in trouble in gynecology and obstetrics, I know where to go—and that is back to old Halben-Seitz's handbook. If it has ever been reported, that handbook has it. So, I told him not to worry, that Halben-Seitz would have it. Unfortunately, most of that book was written before Samson's time—or at least a lot of it was, and they did not have it. In going through a discussion in a recent edition of *Cancer*,[3] on the mode of extension of endometriosis, this man had discovered the tubal implant, blood stream extension and lymphatic invasion as all being possible and probable—and that just suited me perfectly.

In this Masson preparation, there is a little brownish cell sometimes taking a stain suggestive of some flattened endothelium. It is true that in ectopic decidua or normal decidua, all have seen epithelium so flattened that it looks like endothelium, that is, in the surface layers. If this is epithelium, and I am not convinced, but it is a little suggestive, maybe Cox and Bridgens are right.

As to the prognosis of these cases, one cannot be too sure. They may recur in malignant form as long as fifteen or twenty years after operation. They do sometimes extend beyond the confines of the uterus in the form of frank sarcoma. So, one can refute the diagnosis of sarcoma only after waiting twenty years.

I think those endolymphatic masses are direct extensions. I am waiting anxiously until the chest surgeons opens up his patient's chest and shows endometrium on the patient's pleura.

Case 7. Mesodermal Mixed Tumor of the Uterus. (Submitted by Dr. R. F. Birge, Iowa Methodist Hospital, Des Moines, Iowa.)

History.—This 75 year old female complained of vaginal bleeding of about four weeks' duration; no other major complaints.

Physical examination revealed a large uterus and a cervical polyp. Two weeks later, a panhysterectomy was done. The left ovary measured 3.4 cm. in maximum diameter and contained numerous small, firm, yellowish, nodules, separated by seemingly unremarkable ovarian stroma. Other ovary appeared normal. The uterus weighed 257 grams, arising from the endometrium in its right anterior aspect. There was a mass which filled the endometrial cavity. It

2. Hill, Jack: Arch. Path. 43:527 (May) 1947.

3. Cancer 2:399-410, 1949.

was homogeneous, faintly grayish white and rubbery in consistency, measuring 4.5 cm. in diameter. The endometrium in the remaining portions of the lining of the endometrial cavity was thick, with numerous faintly discernible cysts. The patient died ten days after operation on the way home from the hospital, reportedly from pulmonary embolus. No autopsy was obtained.

Diagnoses. — Adenocarcinoma and rhabdomyosarcoma (carcinosarcoma) 8, malignant teratoma (so-called mixed tumor) 1, endometrial sarcoma 2, adenocarcinoma rising in the cystic adenomatous polyp 2.

DISCUSSION

DR. HELWIG: My diagnosis of this case is mesodermal mixed tumor, growing wild on the mesenchymal side. The first section is a polyp. Oftentimes, these mesodermal mixed tumors will appear as a rather large polyp; and in this slide is seen the picture suggestive of a rather benign endometrial polyp with the epithelium suggesting endometrial origin. The next section I think is of interest because it brings up one of the debates that has been going on regarding the epithelial side of the malignancy of these tumors. I call attention to the small cuboid of low columnar cells, the remarkable regularity of these glands and the pale translucent nuclei. The glands are often found lying back to back as seen in endometrial carcinoma. The next section reveals what appears to be an invasive tendency and, yet, there is preservation of uniform nuclear form and small pale translucent nuclei. No gland lumen here seems to have any secretion in it.

Some years ago, Robert Meyer, of Berlin, in his investigations of the embryology of the uterus, found about 20 per cent of the uteri which he studied showed definite Wolffian remnants. Recently, at Northwestern University, Dr. Huffman made serial sections of cervices removed surgically and he found Wolffian remnants in at least 1 per cent of all cases. I call particular attention to that article, which is excellent. Huffman has drawn attention specifically to the type of epithelial cell of Wolffian remnant origin. It seems more logical to assume that these tumors are derived from Wolffian rather than Müllerian remnants. The stromal elements which are mesoblastic, are probably pulled down by the descent of the Wolffian duct and form, it is thought, the so-called mesonephromas or mesonephric tumors. This section seems to be invasive, as of course it may be, and here a stromal change with hyperchromatic changes of the nuclei is seen.

Since the war, I have seen four mesodermal mixed tumors of the uterus. One I saw just last week, which, aside from the lack of these skeletal muscle elements, is in many respects a dead-ringer for the case here under discussion.

Four years ago, Dr. Richard Schutz brought me a little specimen from the cervix of a 22 year old girl. It was not over a centimeter in diameter, and he said it was, he thought, a little polyp. She had mild menstrual irregularity, some slight intermittent spotting, and on routine check he found this little tumor and snipped it off. Much to my surprise, it was a mesodermal mixed tumor with the myxoid elements predominating. A higher magnification shows even better the myxoid stroma. Indicentally, my associate at that time, Dr. Edward Schmidt,[4] published two cases in 1948, so some of you may have seen it; one was

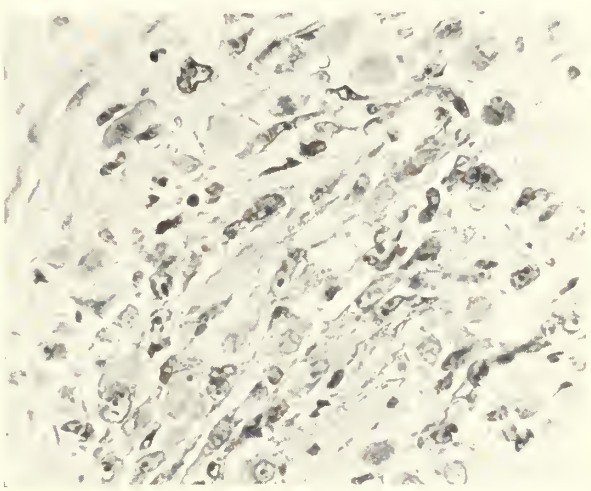


Fig. 7. Photomicrograph showing mesodermal mixed tumor of the uterus.

this tumor. As far as Schmidt was able to find from searching the literature, this growth was smaller than any case on record. The tumor was removed in 1947 and the patient shows no evidence of any recurrence to date.

This section is from a woman of 76 who had a history of twenty days' bleeding, and came in with an enlarged uterus and a big endometrial polypous mass. On section all sorts of mesoblastic elements including cartilage were found. Here, in this section under higher magnification, cartilage is seen. Dr. Boley showed a similar case in the Tumor Clinic at the University some months ago. I have another case which I think calls for a slight diversion here—a little girl with so-called benign polyp of the cervix. No age, no data, nothing was given; just a little bit of a polyp was sent in to a good pathologist in this city, a man whose judgement is excellent. There was a layer of epithelium, and edematous stroma, and a lot of scattered leukocytes in it, and a few spindle form myxoid cells. The diagnosis of benign cervical polyp was made and six months later I saw this child in consultation, with a pelvis full of malignancy and a great fungating grapelike mass in the vagina. The patient was only 6 years old. Of course, when we re-studied the original slide, we could see the atypical changes. I think if the tumor was of the size that is was supposed to

4. Schmidt, Edward: Am. J. Obst. & Gynec. 56:966-972 (November) 1948.

have been at that time, like the case which I showed here first, the lesion might have been completely removed.

For some reason or other, certain physicians think that pathologists are crystal gazers. They just hand them a miniature fragment of tissue and, as Dr. Hertzler used to say—"Here is the tail, what kind of dog is it?" Well, that is about

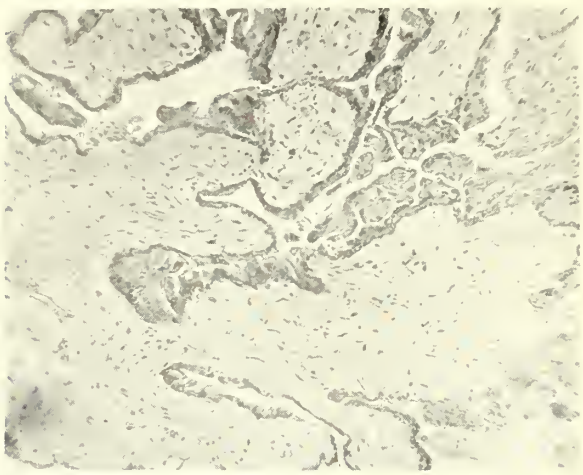


Fig. 8. Photomicrograph of villus showing trophoblastic hyperplasia in a case of spontaneous involution of metastases of hydatid mole.

the situation which occurred when this little fragment was submitted.

Ordinarily, the outlook in these tumors is extremely grave. In fact, most of them are hopelessly advanced when first seen. This one case is the only one, to my knowledge, which is still alive. I have no hope for the case I studied last week. Radiation has not been successful in the management of these tumors, as one might well imagine. Since their most malignant component is on the connective tissue side, one probably would not anticipate any degree of irradiation response under those circumstances.

Case 8. Spontaneous Involution of Lung Metastasis in Case of Hydatid Mole. (Submitted by St. Luke's Hospital, Kansas City, Missouri.)

History.—Mrs. C., a 24 year old white female, was first admitted to St. Luke's Hospital March 16, 1949, in her first pregnancy. Her last menstrual period was November 1, 1948. She began to bleed on February 1 and was put to bed. On February 23, she had severe abdominal cramps and passed what she thought to be tissue, together with considerable hemorrhage. Following this episode, the uterus continued to enlarge.

The only positive physical finding was the enlarged uterus measuring 13 cm. above the symphysis pubis.

Laboratory Examination.—On March 17 per high power field there were 8 to 10 red blood cells and 1 to 3 white blood cells; catheterized specimen on March 19 showed albumin 2 plus, occasional red blood cell; on March 23, Friedman test was positive and on March 29 quantitative Friedman test was positive in dilution of 1/200. Blood on March 16 showed 3.5 million red blood cells, 69 per cent Hb., 14,900 white blood cells, 92 per cent polymorphonuclears and 8 per cent lymphocytes. X-ray, flat plate of the abdomen on March 16 showed enlarged uterus with no fetal parts. Chest x-ray on March 19 showed increased bronchovesicular markings with clouding in the left base; on March 29 showed clearing of the left base, and on March 1 there was a normal retrograde pyelogram.

Hospital Course.—On March 17, dilatation and curettage were done. Gross material had the appearance of a hydatidiform mole. On March 19, the patient complained of a sore throat and some difficulty in breathing. Her temperature was 101.6 F. and it was noted that she was hoarse. She began coughing up blood streaked sputum. By March 22 breathing had become easier and temperature had returned to normal but the hoarseness persisted. On March 25 she complained of right upper quadrant pain and continued to cough up blood streaked sputum. A cystoscopy on April 1 revealed only small ureters and ureteral meatae. The patient's symptoms improved and at the time of discharge on April 10, she had only slight hoarseness.

She was readmitted on May 11 because of pain in the left lower quadrant of the abdomen which was aggravated during urination. Her hoarseness had continued throughout the interval. She had gained five pounds since her discharge from the hospital.

Physical Examination.—Blood pressure was 130/75, pulse 72, respiration 18, temperature 98.6 F. The only positive finding was some tenderness and slight rebound tenderness in the lower abdomen.

Laboratory Examination.—On May 11, red blood count was 4.38 million, Hb. 83 per cent, white blood count 13,000, polymorphonuclears 57 per cent, lymphocytes 38 per cent, monocytes 5 per cent.

X-ray.—On May 14 a chest film revealed numerous discrete areas of density scattered throughout both lung fields of more or less rounded appearance which had not been present on previous examination. These were thought to be consistent with metastatic involvement of the lung fields.

Hospital Course.—A dilatation and curettage on May 12 revealed little tissue and a pelvic examination under anesthesia was normal. On May 13, indirect laryngoscopy showed a paresis of the right vocal cord. The patient was sent home unimproved on May 15.

Diagnoses.—Hyperplastic mole 1, chorionepithelioma 5, history of chorionepithelioma 1.

DISCUSSION

Dr. Helwig: This long history which had just been given is not complete since there is an interesting follow-up. I happened to be in the Far East at the time this section was submitted and Dr. Schmidt made a diagnosis of malignant mole. He got a similar opinion from Dr. Wahl. But, being a medical student and being naturally apprehensive, the young husband wanted to get more opinions. Drs. Novak and Otto Schwartz both studied the slides and they made a diagnosis of nonmalignant mole. When I returned from Japan, I was asked to see the sections, and I concurred with Drs. Novak and Schwartz. To me, among the criteria for making a diagnosis of choriocarcinoma, Hertig to the contrary, one should not

see any well formed fetal villi. However, I think all will observe in this slide that there is a rather extensive hyperplasia of trophoblasts, and some of them are hyperchromatic and deformed, but well formed villi are present. All have seen many benign moles in which marked hyperchromatism was present and in which the villi seemed to be invaded, and the patients got along all right. They did not die; they expelled their moles, later had babies, and lived happily ever after. So, let's say that this case is a borderline type.

This patient spat blood, developed a paralyzed vocal cord and was quite sick, so an x-ray of her chest was taken, which looked like a snow storm, being apparently loaded with metastatic nodules everywhere.

So, it seemed that my diagnosis was wrong. Her husband was informed of her hopeless outlook, that she was doomed; but her mother-in-law did not feel that way. Some wanted the uterus out; some wanted x-ray; but it was felt that there was no hope, that any procedure was all a waste of time. The patient went home without treatment. Two months later she came back, the picture of health. When the first x-ray was taken, the Friedman test was positive in dilutions up to 1:500 and every follicle in the rabbit's ovaries was as black as ink. An anterior- posterior roentgenogram showed about the clearest-looking chest one has ever seen. She had another x-ray in December. She is feeling fine, has a good job and works every day, and that has been over two years. Now, of course, I know that doesn't spell the end, but it looks good. I know Dr. French will be interested in this case because in last month's *American Journal of Obstetrics and Gynecology* Dr. Walter Johnson, from Ann Arbor, reported a similar case.

Now, this business of spontaneous involution of a highly malignant tumor is always questionable. But, certainly, the largest number of such cases has been choriocarcinomas which do some of the strangest and most bizarre things in regard to their growth rate. They may die out in the uterus, and then go growing merrily on in their metastases. Novak has reported similar cases, and still other cases of that type have been recorded.

Almost simultaneously with this case, a man 28 years of age, at the Veterans' Hospital in the mental ward with dementia praecox, suddenly developed paralysis and began to spit blood. They found a nodule in his neck, and that nodule turned out to be a malignant chorioma. He died rather soon thereafter and at the autopsy everything was apparently metastatic, except the testes. Here was found a little fibrous, round, pea sized nodule in which a few degenerate epithelial structures could be made out which were assumed, from the report of similar cases, might possibly be an involution of the primary lesion.

What is the mysterious thing that produces involution? Way back at the turn of the century, Franckle hypothesized that there is some lytic substance in the serum of pregnancy which has the potentiality of dissolving placental tissue, and he showed that it is not present in the serum of women with choriocarcinoma. I think there must be some unknown hormonal influence acting here. We know that so-called "deportation" metastases disappear. We had the idea after this case that

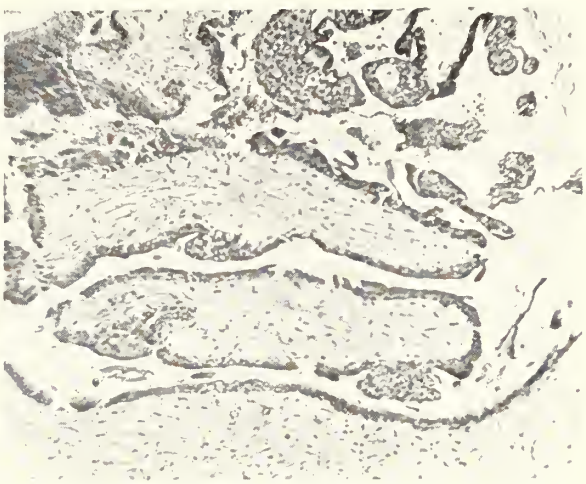


Fig. 9. Photomicrograph showing trophoblastic hyperplasia of villi in fatal malignant mole.

maybe this was not an extremely rare condition, so in two moles observed since then we have x-rayed the chests, finding no shadows in these chests which we could identify as being similar to this massive invasion here. Park and Lee who wrote that recent review in the *Archives of Pathology* say there are no more than twenty authentic cases of spontaneous involution of metastases and perhaps not more than two that have been substantiated by positive Ascheim Zondek tests.

Before I discuss any more about the diagnosis in this case, I am going to show the next case. I want you to compare the two since to me there seems a lesser degree of trophoblastic atypia in this case than was seen in the first case.

Case 9. Malignant Hydatid Mole. (Submitted by University of Kansas Medical Center, Kansas City, Kansas.)

History.—A 23 year old, white, obese female consulted her local physician in August 1950 when a presumptive diagnosis of pregnancy was made. Her last normal menstruation was in June 1950. The patient was put to bed because of "spotting." This ceased until December 1950 when she passed numerous clots and membranes. A dilatation and curettage was done.

Diagnoses.—Hydatid mole 9, chorionepithelioma 3, degenerating placental tissue 1.

DR. HELWIG: This slide shows a villus under low-power which is similar to the previous case. Incidentally, I might say at this point that unfortunately no sections were taken of the original miscarriage from this girl. Four months later she

came into the hospital bleeding and a curettage revealed material which was diagnosed as choriocarcinoma. At that time she had obvious widespread metastases, to the brain, lungs and almost everywhere. She entered the hospital only to die.

Material taken from the curettage does not appear as vicious as the villi in the previous case. No attempt was made to pick any but a typical area for this section.

In this slide, the picture gets a little worse. Now it is beginning to look like the one that involuted spontaneously. Again, these several sections are all from different zones in the curettings. This slide shows some rather large atypical trophoblasts. There are metastases to the spleen, liver, kidneys, brain and lungs.

This slide is taken from the uterus at the time of autopsy. This section is even more anaplastic, perhaps, than observed in the first case. These growths may grow submucously and give little information sometimes from the material expelled.

A lesion from the brain shows massive hemorrhage, all of which suggests a reason why these tumors are not irradiation sensitive. I have not seen any of them treated, but I have seen two cases of choriocarcinoma of the testes with metastases treated and they were quite x-ray resistant. Perhaps this resistance has something to do with these large lakes of blood.

In any attempt to lay down histologic criteria for malignancy of moles, I think the observations of Hertig are important. He made a study of 200 moles from 119 communities, and he ended up with fifty-three cases which he considered malignant; seven of these died. To my mind, there is only one proof of the malignancy of a mole, and that is to have the patient die. If they get well, the moles are not malignant. What is one to do with Hertig's forty-two cases that got well? This is a borderline group which bothers every one. To me, the first case is significant. In my considered judgment, if these patients are going to die, they are going to die in spite of anything that one does for them. Taking out the uterus and ovaries and x-raying the lungs is misspent energy. With such a dictum one will save a lot of uteri that never had a malignancy at all. I have seen not one but several cases just as malignant as either one of these two in every respect, who subsequently have had normal babies. Now we know that x-ray did not cure the first patient and we know that taking her uterus out did not cure her, because neither procedure was carried out. I know this dictum is most certainly not going to meet with uniform approval, but I believe the thing to do is to do nothing in the so-called borderline cases. Moreover, I doubt if one ever saves a genuinely malignant chorioma by any procedure.

Question: May I ask Dr. Helwig for a show of hands on that first case—how many people would call it malignant without a history? I happen to think the same way that you did, and I would like to know how many people would have diagnosed it differently.

Dr. Helwig: Eight people present would have diagnosed it malignant.

(Dr. French definitely disagreed with Dr. Helwig regarding the hopeless outlook for chorionepithelioma. He cited a case in which the patient had the uterus removed on the diagnosis of malignant mole from a curettage. Nine months later she returned with a solitary lung metastasis and she underwent a resection of pulmonary neoplasm, which certainly was a telling observation.)

Question: Would Dr. Helwig also ask the group how many times in their own personal experience they have called it malignant when it has not been?

Dr. Helwig: I think that seven are called malignant that are not malignant for every one that is truly so. How many have called a tumor benign that has killed the patient?—12 per cent.

Dr. Schenken: Dr. Helwig, what do you advise the surgeons when the patient seems to have passed an entire mole and it does not impress you as malignant? Do you advise routine curettement?

Dr. Helwig: No, but I advise them to watch for bleeding and follow it up with a dilution Friedman. They might have become pregnant in the meantime. But if they have an increasing amount of prolan in high dilutions, one must give that careful consideration.

Question: Do you think one can make a diagnosis between pregnancy and chorionepithelioma in any one individual case with quantitative A-Z?

Dr. Helwig: One should be suspicious if it is in very high dilutions. Biologic tests, for me, are not too trustworthy, however.

Question: The thing I am worried about is that they keep worrying about quantitative A-Z's, and that is a lot of work.

Dr. Helwig: What I mean is the dilution of the urine, using the Friedman test, not the quantitative A-Z on the month-old mouse. I do not think anybody around here is doing those tests anymore.

Question: How soon do you expect that to return to negative?

Dr. Helwig: It should within the first two or three weeks after expulsion, if it is all out.

Question: And if it does not, you would say do nothing?

Dr. Helwig: I will tell about a case I had. A woman expelled a mole, the uterus did not come down, and big cystic ovaries were removed. They were filled with big luteal cysts. Because the mole was atypical, they ran quantitative Friedmans on that woman every six months for four years, and it remained positive for those four years. She did not have any ovaries so she could not become pregnant.

Question: What is the relationship of these things that I call hydatidaform change rather

than degeneration, that one sees so often in abortions in the first two or three months of pregnancy in which there is no hyperplasia?

DR. HELWIG: Mall, back in 1918 or 1919 as I recall, attributed these abortions to myxomatous degeneration of the villi. I agree with that. One sometimes sees a considerable amount of trophoblastic proliferation, not atypical, but overgrowth of the trophoblast itself in many abortions. One also sees it in ectopic pregnancy not too infrequently, and I believe the Boston group more or less revived Mall's ideas, that it was a myxomatous degeneration that took place in the villi which was responsible for the abortion. Now, there are all stages of mole, undoubtedly, and I think it was Hertig who published that data in the late 1930's. I call those changes "early moles."

Question: Have you even seen one of those progress?

DR. HELWIG: No, not that I recall.

Case 10. Acute Salpingitis with Reactive Epithelial Hyperplasia. (Submitted by University of Kansas Medical Center and Bethany Hospital, Kansas City, Kansas.)

History.—White female, aged 20, ten days prior to admission on May 20, 1932, developed pain in the abdomen with nausea and vomiting. The pain localized to the right lower abdomen and became increasingly severe. She had onset of menstruation at age 14 and was regular. Last menses were ten days prior to admission and were accompanied by vaginal discharge. One pregnancy; no miscarriages.

Vaginal examination revealed lacerated left tube; palpable right tube, enlarged and tender, uterus in normal position. At operation, the right and left tubes, portion of the left ovary, including a cyst, and the appendix were removed.

Left tube was diagnosed as slight chronic salpingitis; right tube submitted.

Diagnoses.—Salpingitis 4, salpingitis with squamous metaplasia 1, salpingitis with reactive epithelial hyperplasia 1, salpingitis (mycotic?) 1, salpingitis with decidual reaction 1, atypical adenomatous hyperplasia 1, adenocarcinoma of Fallopian tube 3, adenocarcinoma with infection 1.

DISCUSSION

DR. HELWIG: I think this case shows a picture that could be misinterpreted as malignancy. I have seen the same thing happen several times before, in which the epithelium took on a bizarre type of overgrowth and seeming undergrowth, but I believe the slides fail to show any frank invasion.

One can see the epithelial folds of the tubes producing many pseudoalveoli. The lumen of the tube is filled with purulent exudate. High power study of the nuclei reveals a remarkable uniformity of nuclear structure without frank invasive change. Occasionally inflammatory cells are confused with tumor; so, there is sometimes reason for making a diagnosis of an early atypical hyperplasia.

There is a sharp definition of the epithelium all the way around with no clear evidence of penetration beyond the normal confines. These cells, I think, appear within the range of simple hyperplasia. Carcinoma of the tube is a rare disease. Pathologists, I suppose, see more than surgeons do, and they probably constitute less than 1 per cent of all gynecologic malignancies. There have been several large series reported; I know Martzloff reported one series of 360 odd cases from the

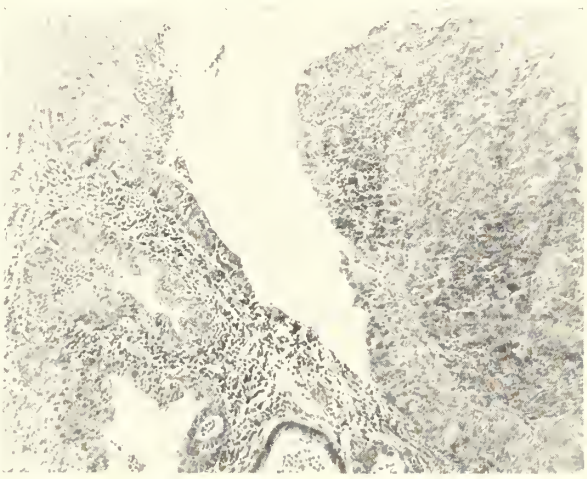


Fig. 10. Photomicrograph showing excessive benign hyperplasia of tubal epithelium in acute salpingitis.

literature, and he found that they were twice as common on the right side as on the left, and that about one third were bilateral. To me, the difficulty in diagnosis of cancer of the tube has been the fact that they are too frequently diagnosed only in the advanced stages, and at that time they have spread to the ovaries, involved lymphatics and penetrated the wall of the tube. They have implanted themselves on the peritoneal surfaces and all round the pelvis and it is impossible to figure out which is the primary and which the secondary lesion. It is the same old story one encounters in bilateral ovarian malignancy with corpus cancer. It is often a question of from whence these tumors spring. It seems to me the rare instance of so-called hydrops tubae perfluens with which intermittent evacuation of either bloody or clear fluid from the uterus is sometimes considered as a diagnostic feature has been over emphasized.

DR. SEXTON: I think it is rather interesting that one finds rather similar changes in the uterine tubes of rats, for example, with inflammation, and they have been interpreted as carcinoma, especially in experiments in which carcinomatous agents have been used.

Case 11. Granulosa Cell Tumor of the Ovary Combined with Argentaffinoma of the Appendix. (Submitted by Dr. Hilliard Cohen, Menorah Hospital, Kansas City, Missouri.)

History.—Negro female, aged 30 years, complained of vomiting and excruciating pain in the right side

of the abdomen for two days and amenorrhea during the previous two months. Prior to this, menstruation had been normal, periods occurring every twenty-eight days and three to four days. There was no previous pregnancy.

Physical Examination.—The patient was asthenic, poorly nourished, apprehensive and had marked exophthalmus. The abdomen was distended by a large smooth, firm mass which appeared to arise in the pelvis and extended to the costal margin. Blood pressure was 120/80, temperature 102 F., pulse 100, respiration 22. Urine showed 1 plus albumin and many white blood cells. Blood showed Hb. 71 per cent, red blood cells 3.7 million, white blood cells 12,800. Friedman test was negative. Exploratory laparotomy revealed a large solid tumor apparently arising in the left ovary. The left tube, right tube and ovary and uterus appeared normal. The mass, left tube, and appendix were removed. The patient died eight days postoperatively with what appeared to be intestinal obstruction. No autopsy was performed.

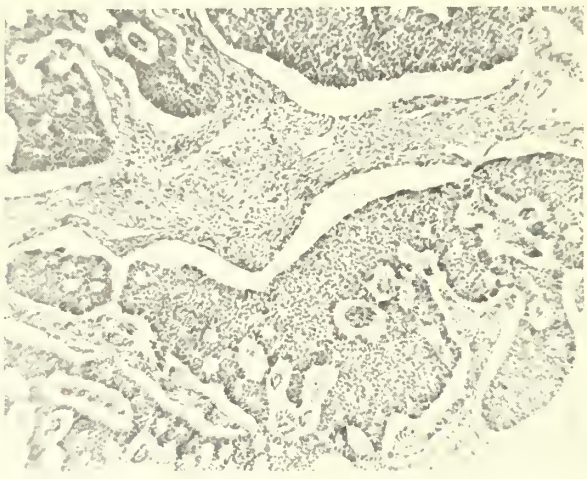


Fig. 11. Photomicragraph showing folliculoid pattern of nonfunctioning granulosa cell tumor of the ovary.

Gross Description of Tumor.—The mass weighed 300 grams and measured 30 by 21 by 8 cm. External surface was smooth. Sectioned surface revealed it to be solid and to be composed mainly of soft, friable, pink red, hemorrhagic and necrotic tissue with multiple pseudocysts filled with hemorrhagic fluid. Irregular foci of yellow gray and gray white, soft tissue were present at periphery of the mass. Appendix was of average caliber and length. In the distal one third, the lumen narrowed or obliterated and near the tip was a 3 mm. bright yellow nodular focus in the wall.

Diagnoses.—Granulosa tumor with metastases to ovary 4, granulosa cell tumor of ovary; carcinoid tumor of appendix 3, arrhenoblastoma of ovary and carcinoid tumor of appendix 1, anaplastic carcinoma of ovary; carcinoid tumor of appendix 1, carcinoid of appendix with metastases 4.

DISCUSSION

Dr. Helwig: I do not believe it is possible on morphologic grounds alone to make a positive diagnosis of these two specimens. So, whether this is a carcinoid with metastases to the ovaries, malignant granulosa cell with metastasis to the appendix, or two tumors, cannot be determined with H & E stains. Frankly, when I saw these slides with the routine stains I would not make a diagnosis. When the differential staining technics were tried, it became obvious with what we were dealing. As I recall, this woman had no evidence of an excessive estrogenic activity at the time, and one would hardly expect it from the ovarian tumor pattern and from what will be seen as we go along with these sections.

A cross section of the growth demonstrates nicely the degree of hyperemia and, yet, there were yellowish to grayish cellular areas scattered about on cross-section.

Another section shows what we interpret as a rather adult type of folliculoform, well differentiated, granulosa cell tumor of the ovary. I searched diligently for thecal elements in this tumor and they were scanty. It is, certainly, predominantly a mature folliculoform granulosa cell growth. This is substantiated to a certain extent by the differential staining method showing a paucity of thecal elements in the tumor.

A higher-power section shows the fairly uniform character of the nuclei, so one expects this to be a low grade malignancy if it is malignant at all. However, I have been fooled with these tumors, even in the presence of apparent cytologic innocence.

In a section of the appendix there is also a folliculoid pattern. The gross specimen certainly was that of argentaffinoma.

A Fontanna stain, which stains the argentaffin cells black, established the silver affinity of a carcinoid of the appendix.

Extra help is obtained from another section from the Scharlach R; namely, the presence of the lipid substance in the carcinoid. This was first described by Masson many years ago. This fatty substance he discussed in his treatise on the subject.

In another section, the ovary is stained with silver and one sees no evidence of silver impregnation of any of the tumor cells. They are argentophobic. Dr. Cohen wisely mounted the two sections on the same slide so that one cannot say that anything went haywire with his fat or with his silver impregnations.

In a fat stain, only rarely will one see a cell of theca type taking the fat stain since the more adult granulosa cell apparently is not a manufacturer or a storer of the steriod.

No special microchemical studies for steroids were done though I know all are familiar with the microchemical determinations which have been made on these tumors. Fluorescence, fat, double refraction under Cross-Nichols' prisms and chromagenic studies have all been employed, and actual extraction of steroids has also been done. It is my understanding that these steroids are found only in the stromal elements and that



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they also have been observed in the Graafian follicle itself, but none is found in the cells of the granulosa cell components of the Graafian follicle. Also, it has been shown, I believe, by Aschcim and Zondek, by implantation of the granulosa cell zone, that the granulosa cell is nonfunctioning as far as the presence of steroid hormones is concerned. We have here two tumors, each morphologically similar and yet entirely different. These carcinoids are seen so commonly that any discussion of them is a waste of time.

I have been quite interested in the association, or the lack of association, between granulosa cell carcinoma and carcinoma of the corpus uteri. In regard to malignancy of granulosa cell tumors, there is a wide variance of opinion ranging all the way from 10 per cent to 50 per cent. Not too long ago, Te Linde reported three rather interesting cases which recurred in malignant form fifteen, sixteen and nineteen years after removal of the primary tumor. So, one must again, as with melanomas, wait perhaps longer before making a flat diagnosis of innocence. Dockerty, of the Mayo Clinic, has reported two series of cases showing a rather high incidence of cancer of the corpus with granulosa cell tumor; I believe it ran about 10 per cent. In his second report, of a much larger series, it was not so high. The estrogens as carcinogenic agents is a debatable issue in corpus cancer. It is a sort of a paradox in a way, because most women develop corpus carcinoma after the menopause when most of their estrogenic activity has at least slowed up to a marked degree. Hence, the release of inhibitors enters the argument here. Some interesting experiments have been carried on. One woman, I believe she was Fremont Smith's patient, over a period of eight years, by accident, received a dose of 12 million units of estrogen. She continued to have some bleeding, and a series of endometrial biopsies was taken. It was possible to trace hyperplasia through atypical hyperplasia to actual invasive carcinoma in this woman's uterus. Greene has shown that old multiparous rabbits subjected to whatever it is they use of produce toxemia of pregnancy in rabbits, developed liver disease and a reasonably high percentage of them later developed carcinoma of the corpus uteri. The rabbit is apparently quite unique in that respect. No dose of estrogen has ever been given to an animal that has developed corpus carcinoma although Allen did produce what appeared to be cancer of the cervix in mice by the use of large doses of estrogens.

Question: What percentage of carcinoma of the corpus occurs in hyperplastic endometrium?

Dr. Helwig: In hyperplastic or atropic or both? Well, in the *American Journal of Obstetrics and Gynecology* a year or so ago, a careful study was reported of the endometrium of corpus carcinoma in the uninvolved parts and it was found that a high percentage showed endometrial hyperplasia. These were the localized endometrial cancers. All have seen the little cystic polyp in the senile involuted uterus in which part of the polyp was cancer, but it is not often that one sees them.

BOOK REVIEWS

Sex Without Fear, S. A. Lewin, M.D., and John Gilmore, Ph.D., Foreword by Sarah K. Greenberg, M.D. Lear Publishers, Medical Division, New York. 1950. Price $3.00.

This small book of 121 pages is well written and easily read. There are many fine illustrations, some in colors. Some of the illustrations are in black and some in color. Male and female organs and states of pregnancy can be understood quite readily by these cuts.

The text is considered in twelve chapters. At the end of the book is a short "Glossary" which should be valuable for the lay reader to obtain definitions of many of the technical terms. In the various chapters are considered the reproductive system, endocrine glands, all the necessary knowledge relative to intercourse, pregnancy, sterility, the climateric in the male and female, aphrodisiacs, and the various contraceptive methods, abortion, and venereal diseases.

The author states that the book has been designed especially to be placed in the hands of young people about to be wed. For this purpose it can well be recommended. It might be somewhat too technical for a person with a deficient education. However, any high school or college graduate should be able to comprehend practically all of the text. Especially is this so when they have a glossary at the end of the book which may be consulted. A. L. S.

Endocrinology, Textbook of, Edited by Robert H. Williams, M.D., Executive Officer and Professor of Medicine, University of Washington Medical School, Seattle, With the collaboration of Peter H. Forsham, Harry B. Friedgood, John Eager Howard, Edwin J. Kepler, William Locke, L. Harry Newburgh, Edward C. Reifenstein, Jr., William W. Scott, George Van S. Smith, George W. Thorn, Lawson Wilkins. Illustrated. W. B. Saunders Company, Philadelphia and London. 1950. Price $10.00.

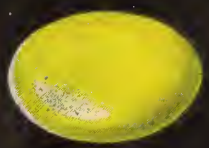
This is a well organized text which draws on the talent of some of the best known endocrinologists of the country. They have written in a lucid manner which is a credit to their reputation. Normal and abnormal endocrine physiology is well described and clinical diagnosis and treatment are discussed in detail. There are excellent photographs (some in color) in sufficient number to illustrate most of the conditions described and the result of treatment in many. There is a final chapter devoted to that interesting, but often neglected, phase of endocrinology, "Neuroendocrine and Psychodynamic Aspects of the Endocrinopathies."

Incorporated in the book is a chapter on obesity included, according to Editor Williams, because of "the common notion that it is related to endocrinopathies, despite present evidence to the contrary." A chapter on "The Influence of Endocrine Glands on Growth and Development" should be of considerable interest and help to those treating children. In my opinion this text adequately fulfills the need for an up-to-date presentation of the rapidly advancing field of endocrinology. J. G. J.

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Case Report

ELECTROSHOCK THERAPY DURING PREGNANCY

GEORGE W. FORMAN, M.D.
H. D. KEARBY, M.D.
AND
MANNING E. GRIMES, M.D.
ST. JOSEPH, MO.

CASE REPORT

The use of electroshock therapy for treatment of mental illness occurring during pregnancy was first reported by Politan and Hoch in 1945.[1] These authors reported the treatment of two patients. The first case was a 33 year old woman whose first pregnancy occurred at the age of 26 when a difficult labor was terminated by version and extraction. During the following years she had four episodes of depression and had made several attempts at suicide. During the second month of her second pregnancy she developed another attack of depression. At three and one half months of pregnancy she received six electroshock treatments consisting of five grand mal convulsions and two petit mal attacks. Following this treatment the patient continued cheerful and emotionally and socially adequate throughout the period of gestation. She underwent a normal, spontaneous delivery at full term and the child was fully developed in every way. The second patient, a 27 year old married white woman, was diagnosed as having psychoneurosis-conversion hysteria in which there was a large depression component. After other methods of treatment had failed, and when the patient was approximately seven months pregnant, she was given a total of ten electroshock treatments with ten major convulsions. There was no change in her mental condition and electroshock therapy was followed by analytic type of psychotherapy following which the patient did fairly well. At full term, after twenty-one hours of labor, she spontaneously delivered a normal male infant weighing 3,470 grams.

Since that time we have been aware of numerous instances of the use of electroshock in treatment of mental illness during pregnancy. We are unaware of any instance in which this form of treatment has proved detrimental to the continued pregnancy, or to the development of the fetus.

CASE HISTORIES

Case 1. Mrs. D. M., a 22 year old white female, was first seen in the Neuropsychiatric Section of the Thompson, Brumm and Knepper Clinic on March 21, 1949. On the night of October 1, 1948, the patient had been involved in a severe automobile accident in which her husband and her sister's husband both lost their lives. The patient had been hospitalized at St. Joseph's Hospital, St. Jospeh, for a period of three weeks, the first seven days of which she had remained unconscious. She had a retrograde amnesia reaching back to include the entire week preceeding the accident and which continued for a period of two to three weeks after the accident. She did not recall being in the hospital nor of returning home. X-ray of the skull did not reveal a fracture, but blood was present in the cerebrospinal fluid following the injury. She did recall in a fragmentary manner while in the hospital, having been told she had a 14 month old daughter but she could not remember the daughter. She had continued in a dream state following dismissal from the hospital for a period of five months until two weeks preceding the above examination. Her complaint at the time of this examination, on March 21, 1949, was of a sensation that "something was present in the left frontal area that should come out" and of "having funny thoughts." She described her feelings by stating that she had been living in a dream and would feel the curtains to assure herself that they were real. There had been no complaints of dizziness, tinnitus, nausea or vomiting, and sleep had been adequate.

This patient, of Spanish extraction, was the seventh of seven siblings. One brother had died of cerebral concussion. Her birth and development had been normal. Her father was a laborer and her parents were kind and affectionate. She had suffered from enuresis until ten years of age. She had had the usual childhood diseases and had not suffered any injuries during childhood. She had progressed to the seventh grade, quitting school at 11 or 12 years of age to go to work. Her school record was good. She had done factory work, worked as an elevator operator and as a filing clerk. Her characteristic personality was described as with wide mood fluctuations. Her first marriage was at 18 years of age and she now had one child, a daughter aged 18 months.

Physical examination was essentially negative. Blood pressure was 96/58. She was 5 feet and ½ inches in height and weighed 100 pounds. Pupils were round, equal and reacted normally to light, both direct and consensually, and in accommodation. There was no strabismus, ptosis or nystagmus. Fundi were normal. Conjunctival reflexes were present, both direct and consensually. Temporal, masseter and pterygoid muscles showed normal strength and amplitude. Hearing was normal bilaterally (watch test). Tongue protruded in the midline. Facial movements all showed normal strength and amplitude. Sensations of smell and taste were normal. Deep reflexes were physiologic and there were no pathologic reflexes. Abdominal reflexes were normal and equal bilaterally. All muscle groups showed normal strength and amplitude. Stereognosis was normal, asynergia was absent and there were no tremors. X-ray of the skull showed no abnormalities. Blood and urine examinations were normal and the Kline test for syphilis was negative. Those complaints progressively cleared and, by May 17, 1949, she was without complaints and apparently normal.

(G.W.F.) Consultant in Neurology and Psychiatry, Thompson, Brumm and Knepper Clinic, St. Joseph, Mo.

She was not seen again until September 20, 1949, at which time it was learned that she had been having sex relations with a young man with whom she had been keeping company. Her last menses had been in June, 1949. In August she considered herself to be pregnant but was not depressed. She and the young man were married on September 1, 1949. She began feeling depressed four days following their marriage, developed an estranged feeling toward her husband, did not want him to touch her, resented his affection and had moved from their home back to her parents' home. The patient was obviously depressed with feelings of futility about the future and showed a marked decrease in psychomotor activity.

She was seen several times in the next few days. On October 1, 1949, her husband committed suicide. On October 10, 1949, the patient wished and was asking for an abortion, declaring that to have the baby would "drive her completely insane." Additional psychiatric consultation was obtained and it was decided to institute electroshock therapy. Beginning on October 15, 1949, at which time the patient was considered to be approximately four months pregnant, until October 28, 1949, she received a total of seven electroshock treatments with seven major convulsions. Following these treatments the patient showed a return to normal emotional status, was adequately cheerful and was freely communicative. She went on to full term without further emotional illness. On April 11, 1950, following a normal labor of six hours, she delivered a 6 pound and 2 ounce baby girl. The infant showed normal conformation, cried at birth and had good color. The infant nursed well and weighed 6 pounds and 6 ounces on discharge from the hospital on the sixth postpartum day. The mother has not shown further emotional illness since delivery and the child has been reported to be showing normal growth and development.

Case 2. Mrs. O. T., white, 43 year old wife of a farmer, was seen at the office of one of us (H. D. K.) on January 20, 1950. She had never been pregnant and had never used contraceptives during twenty-two years of marriage. A diagnosis of pregnancy of one and one-half to two months was made. The patient was obviously anxious with a feeling of futility regarding a first pregnancy at the late age of 43 years. The emotional disturbance increased progressively and she was referred for neuropsychiatric consultation.

The history and findings obtained from this 43 year old primipara at the time of her first examination by the psychiatrist were as follows: She was then approximately five months pregnant. On first learning of her pregnancy she had reacted disparagingly and declared she was too old to begin raising a family. She became extremely tense, progressively more depressed and developed progressing insomnia. She had suffered for several weeks with cramps in her arms and legs. She had sagging of her facial features and complained of confusion and inability to think clearly. She was unable to do her housework and had unwarranted degrees of fatigue. She complained of feeling like crying but being unable to cry and was aware of her loss of interest in all activities and in the future. She complained of the subjective sensations of trembling and quivering in her legs and her hands and of the sensation that her mind was "drawn up in a knot." She expressed the fear of "losing her mind," a mental symptom which has been attributed to subconscious feeling of hostility.[2] She expressed the fear she was going to die from weakness, "just dwindle away." Her depression and anxiety were worse in the morning.

This patient, the eldest of six siblings, was the daughter of a farmer. Her birth was normal and her growth and development were normal. Her parents were kind and affectionate and her childhood was a happy one. No definite history of childhood maladjustment could be obtained such as fears, nervous habits, spasms, enuresis or tantrums. She suffered from the usual childhood diseases and there were no serious injuries and no operations during childhood. She had completed the eleventh grade at 16 years of age and was valedictorian of her class. Following her discontinuing school, she remained in her parents' home and worked at intervals in private homes. She was married to a farmer at the age of 23 years. Throughout her married life she had taken an active part in many rural social organizations. Although she had many friends she was predominately reserved and normally was a worrier.

This patient was refractory to psychotherapy. It was felt that depression was the predominating emotion even though a definite element of anxiety was recognized as present. In view of this consideration and the fact that her depression was progressively becoming more intense, she was admitted to the psychiatric service of the Missouri Methodist Hospital on March 29, 1950, for electroshock therapy. Her diagnosis was reactive depression.

From March 30, 1950, to April 17, 1950, the patient received a total of nine electroshock treatments including eight major convulsions and three petit mal attacks. There was great improvement in her emotional status, with ability to sleep, lessening of her tension, her fears and her depression. She still maintained, however, that she did not feel equal to raising a child. She got along fairly well for several weeks but again began showing increasing signs of depression, anxiety and insomnia. She was seen again in psychiatric consultation on July 16, 1950, at which time she was greatly depressed and anxious and gave a history of recent rapid increase in these emotional factors. In view of this increasing unfavorable trend, it was felt hazardous to continue the pregnancy with her emotional illness untreated. Since the pregnancy was estimated at eight months and ten days duration and the fetus was considered viable, delivery by cesarean section was felt to be less hazardous than instituting electroshock at this late period of gestation. In addition, the patient had a generally contracted pelvis.

On July 19, 1950, a cesarean section was performed under ether and oxygen anesthesia and a baby boy weighing 5 pounds and 4 ounces was delivered. The baby cried at delivery and its color was good. The child was maintained in an incubator for 4 days; color remained good, it nursed well and the neonatal period was without jaundice. Its weight at the time of discharge from the hospital at the age of 11 days was 5 pounds and 6 ounces.

On the tenth day of the postoperative period the patient developed a phlebitis of a deep vein of the left leg. She continued with much anxiety and depression and feelings of futility with fears of insanity following the operative delivery. She was seen by the psychiatrist on September 28, 1950. Since discharge from the hospital she had continued moderately depressed and the baby had been under the care of

a nurse. Electroshock was withheld because of possible embolism from the phlebitis.

On January 25, 1951, electroshock therapy was again instituted because of continued depression. From January 25 to February 5, 1951, the patient received five electroshock treatments and again had marked improvement. Partial relapse occurred in April, 1951, and the patient was given one additional electroshock on April 17, 1951. Following that treatment she apparently recovered and has been caring for her child and home since.

COMMENT AND SUMMARY

As mentioned by Politan and Hoch,[1] it is an interesting phenomenon that electroshock therapy which produces such violent contractions in striated muscles, has little direct influence on the cardiac muscle and the smooth muscle of the intestinal tract, and apparently on the muscle of the gravid uterus which also operates under the influence of the autonomic nervous system.

Nausea and vomiting occur at times following electroshock and we have had epigastric distress evidently due to psychic disturbances during intervening periods between treatments. There is evidence of vagus stimulation producing cardiac slowing during electroshock treatment. To the latter has been attributed some cardiac complications of this form of treatment which fortunately are quite rare.

The reported cases attest to the comparative safety of electroshock therapy during pregnancy. There was no evidence to show a production of uterine contractions, or of a detrimental effect on the uterine circulation which might cause anoxia of the fetus.

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2. Horney, Karen: Our Inner Conflicts, W. W. Norton and Company, Inc. p. 145, 1945.

BOOK REVIEW

HIPPOCRATES ON INTERCOURSE AND PREGNANCY, An English Translation of On Semen and On the Development of the Child, by Tage U. H. Ellinger, Sc.D., M.A., with an introduction by Alan F. Guttmacher, M.D. Printed Henry Schuman, Inc., New York. $2.50.

This book will be enjoyed by anyone interested in old medical writings, bringing thoughts on embryology, physiology of pregnancy and delivery, and heredity from the time when humours were thought to control health and disease. There is perhaps the earliest description of scientific research in embryology employing fertilized chick embryos. Dr. Guttmacher's notes at the end of the volume point out the inaccuracies found in the text. This probably is not necessary for the medical readers but readers without medical education might accept as fact some of the wierd theories of Hippocrates.

In the preface it is pointed out that this is not written by the great Hippocrates of Cos but by one of a rival school.

M. E. M.

Advertisement



From where I sit *by* Joe Marsh

If They're Wild, They Belong to Tik!

Saw Tik Anderson last week and was reminded of the first time I ever spoke to him. The missus had sent me out one Saturday afternoon to hunt for some blackberries.

I took a long hike and couldn't find any. Finally, I came to Tik's house along that low stretch east of the fork on River Road. "Hi there," I says, "any blackberries around here?"

Tik says, "There used to be—but I don't know much about things that grow wild." Later, I found how Tik supports his family by picking berries. Ever since that time, I've been like the rest of folks in town—respectful of his right not to tell where "his" berries grow.

From where I sit, respecting other folks' rights comes natural in our town . . . and in America for that matter! Whether it's a person's right to enjoy a temperate glass of beer or ale, or the right of a man to practice his profession without outside interference, it's all a big part of a real democracy!

Joe Marsh

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PRESIDENT'S PAGE

One of the greatest obligations and, indeed, the greatest wish of the majority of physicians is to give every assistance possible in maintaining the highest standards of medical care that scientific knowledge makes available. The great work that the American Medical Association has done through its Council on Medical Education and Hospitals dates back to the Flexner report about 1912. Flexner's contribution to the elevation of the standards of medical care is of inestimable value. Scientific medicine has reduced the death rate in the United States 45 per cent in the last fifty years.



This is not just the work of one man, or one Council of the American Medical Association—it is the work of the whole medical profession, of every member of the medical profession in supporting the highest minimum standards of medical care for all the people.

Recently, it has come to the attention of the President of the Association that a few members of the medical profession have signed the applications of chiropractors to take an examination to practice midwifery in the state. This, of course, is not only unethical but contributes to lowering the high standards of medical service which the vast majority of doctors have assisted in elevating. It is opposed by comparison to the work of the Council on Medical Education and Hospitals in exposing quackery and cults and in closing second grade medical schools over the country, a good many in Missouri.

Every member of the Missouri State Medical Association has a moral obligation to the profession in maintaining the high minimum standards of medical care to which the citizens of Missouri are entitled and it is a solemn professional obligation on each and every one that this be fulfilled.

J. William Thompson M.D.

Editorials

STANDARDS AND WAGES

The other night I heard a radio commentator say that there had finally been established and placed in effect a minimum wage for teachers of Missouri, the smallest salary, I believe, was $1,600.00 and raises would be based on college credits so that a teacher with a masters degree could earn the magnificant sum of $2,800.00 per year.

That little blurb on the radio, a little news item, upset me; it shows how "screwy" our thinking has become and points immediately to the cause of many, many of our problems.

First, there is the salary itself. In this day and age the flunkie who dropped out of school after the third grade makes $2,800.00 a year and yet school board members, legislators and, unfortunately, taxpayers expect a teacher to get a "higher education" and keep on getting it, using their own time and resources so that they may eventually earn $250.00 a month. Obviously, anyone with the proper qualifications for a teacher could double or triple that take without trying.

Someone at this stage always says: "But we get teachers at those wages." Why? Because some people would rather teach than eat for it is obvious they cannot do both at today's prices. Eventually, even they find it difficult to teach on an empty stomach and seek greener pastures; and that is why we do not have many teachers—real teachers, anymore.

The second silly thing that is brought out in the aforementioned statement is that increase in salary is based on credit hours earned in a university or college. What nonsense! Do not pay a teacher for teaching, for doing an unusually good job, for showing interest, initiative and love of children. Do not increase the salary because the teacher comes early, stays late and has a knack for building citizens; men and women from boys and girls. Oh no! Do not do that, that would be too logical and would take thinking, supervision and alertness on the part of the teacher's superiors. It is so much easier to give them a "couple of bucks" more for every credit hour they gather from going to school in the summer when they might more profitably, if they wish, be preparing better things for their pupils in the fall. What has happened to us in America? Why are we so enamored of credit hours, college degrees, certificates, special boards? They have no magic of their own; they do not assure competence, interest, initiative and all the important things that are needed for progress and understanding. All that a degree or other academic award can mean is that the individual who holds the award spent a certain amount of time in a certain place doing certain things to the satisfaction of a certain group of people.

There is a grave danger that we can do ourselves and our community a great deal of harm by setting up artificial standards that have no real meaning so far as the job to be done is concerned. Look about you, read the papers, check on magazine articles. The people who get things done, who move, who think, more often than not did not get a degree; frequently they did not go to college; often they left before the degree was obtained and I do not mean the pioneers of a hundred years ago. I mean many of the leaders of today.

If we, as physicians, want to do our community, our state and our country some good, we might well take a hand and do some serious thinking about our teachers, our schools and children.

You cannot keep good teachers for $200.00 a month and you cannot pick the most effective, intelligent, understanding, eager teachers by adding up the credits they earn in a college during their summer vacations and at night school.

The time for energetic support of the good teachers in our country is now; in fact, as usual, we are late. It is high time that we use our energies to support the effective teacher and to see that such teachers are paid adequately. Given the incentive and the wherewithal the interested teachers will seek advanced training because they want it and are interested in it, not because it comes as a decree from a school board or administrator and is a necessary evil to be tolerated in order to hold a job.

R. O. Muether, M.D.

PHYSICAL IMPAIRMENT STUDY BEING MADE

A study now being made by the Committee on Mortality of the Society of Actuaries is probably the largest actuarial study of physical impairments ever undertaken and is the first major statistical study of medical impairments made since before World War II.

Policyholders of companies representing three fourths of all life insurance in the United States and Canada will be covered. The study will cover primarily the experience under policies issued between 1935 and 1949, traced through 1950. Included will be 132 groups of impairments and medical histories, further subdivided so as to comprise 388 classifications in all. The study will cover practically all physical impairments except abnormal blood pressure and abnormal build.

The medical profession will look forward to the report of this study which should furnish a means of evaluating the part clinical medicine has and can take in a continuing lowering of the death rate and maintaining good health among the general population.

Organization and Economics

NEWS NOTES

Two hundred seventy-one licenses to practice medicine in Missouri were issued by the Missouri State Board of Medical Examiners in July, two hundred thirty-eight after applicants had taken written examinations and thirty-three were issued by reciprocity.

F. T. H'Doubler, M.D., Springfield, was elected president of the Missouri State Board of Medical Examiners at a recent meeting. William J. Shaw, M.D., Fayette, was elected vice president and W. O. Finney, M.D., Chaffee, secretary-treasurer. Other members of the board are Edwin C. White, M.D., Kansas City; Edwin C. Schmidtke, M.D., Columbia, and Walter L. Brandon, M.D., Poplar Bluff.

"Know Your Heart" is the subject of a series of broadcasts which began in August over twenty radio stations in Missouri The thirteen week series is sponsored by the Missouri Division of Health, the United States Public Health Service and St. Louis University School of Medicine.

Roy V. Boedeker, M.D., St. Louis, will speak before the General Practitioners Study Club of Greater St. Louis on September 17 on the subject "Management of Abortion."

MUSINGS OF THE FIELD SECRETARY

Atlanta, Missouri, a small town in Macon County on U. S. Highway 63, between the larger centers of Kirksville and Macon, has good reason for a feeling of pride. Its venerable Doctor of Medicine, Dr. G. C. Lyda, 89 years of age, who has been looking after the health needs of that community for decades, is still going strong. He regularly maintains office hours from 9:00 to 12:00 and 1:00 to 5:00 but has eliminated the night calls. The good doctor would like a partner. He feels that he has a fine opening for a young physician who will need no money in effecting this association.

The Association office has information on other location opportunities throughout the state cataloged for aid to any physician looking for a location.

Large medical meetings over the state for this fall are now taking shape. Plans are practically complete for afternoon and evening Councilor District meetings in District 1 on November 13; in District 2 on November 6; in District 4 on October 16; in District 5 on October 23; in District 6 on October 23; in District 8 on November 6; in District 9 on October 16, and District 10 on October 9. A part of these programs will be devoted to a "Symposium on Trauma" relating to civil defense.

The Missouri Academy of General Practice has scheduled a series of five postgraduate evening meetings in nine centers over the state. These are Cape Girardeau, Kennett, Louisiana, Columbia, Rolla, Nevada, Springfield, Warrensburg and Chillicothe. The dates of the sessions in these towns will be September 25, October 30, November 20, December 4 and January 22.

NEW MEMBERS

Lichtor, Joseph M., Kansas City.
Licon, Francisco, M.D., Winfield.
Keltner, Raymond O., M.D., Raytown.
Macdonnell, Thomas M., M.D., Marshfield.
O'Connell, Frank A., M.D., Kansas City.
Owens, Richard L., M.D., Kansas City.

DEATHS

Gauen, George O., M.D., St. Louis, a graduate of Washington University School of Medicine, 1904; member of the St. Louis Medical Society; aged 71; died June 6.

Gundelach, Charles A., M.D., St. Louis, a graduate of Washington University School of Medicine, 1908; member of the St. Louis Medical Society; aged 69; died June 21.

Reeves, George W., M.D., Farmington, a graduate of Beaumont Hospital Medical College, St. Louis, 1898; member of the Phelps-Crawford-Dent-Pulaski County Medical Society; aged 80; died June 21.

Scobee, Richard G., M.D., St. Louis, a graduate of the University of Texas, 1939; member of the St. Louis County Medical Society; aged 38; died June 22.

Pittam, Jesse T., M.D., Kansas City, a graduate of the University Medical College of Kansas City, 1902; honor member of the Jackson County Medical Society; aged 77; died July 6.

McCormick, Frank L., M.D., Moberly, a graduate of the Central Medical College of St. Joseph, 1904; member of the Chariton-Macon-Monroe-Randolph County Medical Society; aged 75; died July 22.

Vanorden, Herbert F., M.D., Kansas City, a graduate of Johns Hopkins University School of Medicine, 1910; honor member of the Jackson County Medical Society; aged 68; died July 29.

COMMAND PERFORMANCE OF THE KANSAS CITY SOUTHWEST CLINICAL SOCIETY

The Kansas City Southwest Clinical Society is proud to announce its program for the Annual Fall Clinical Conference, October 6, 7, 8, 9, 1952.

Of especial interest this year is the celebration of the 30th year of conferences held by this society; thirty years of postgraduate instruction and training given by the outstanding men of medicine. With this

background of distinguished names—the leaders of the profession—one constantly hears the remark, "Why can't we have Doctor So-and-So back again," to which has been replied "it is the policy of this society to constantly present new names" but now—the executive committee, fully aware of the excellent talent of past years and heeding the call, is proud to present

"A COMMAND PERFORMANCE"

Sixteen of the outstanding guests of past years have been invited to participate this year. (See page 782). Since it was not possible to comply with all requests, those best fitted for the program this year were invited.

It is the society's hope that future "Command Performances" may be held so that many of the past guest speakers may be brought back—men who have given so freely of their time to further the progress of medicine through the Kansas City Southwest Clinical Society.

DIVISION OF HEALTH

BRUCELLOSIS

The Division of Health in Missouri was represented at the North Central States Conference on Brucellosis in Animals and Man by E. R. Price, D.V.M., Public Health Veterinarian with the Bureau of Communicable Diseases.

The conference, held in St. Paul on July 7, 8 and 9, 1952, was attended by 145 delegates from fourteen North Central states. Many of the delegates were national authorities on various phases of the disease and its eradication. The medical group consisting of about twenty physicians included such men as Drs. Wesley W. Spink and Norman B. McCullough.

The group was divided into ten task forces. Each task force was given a specific problem to study. For example, task group 2 was given the following problem: What are the epidemiologic and other problems of brucellosis in the human and how can the program best be coordinated with animal brucellosis eradication? Six recommendations were made by this group and two strengthening amendments were attached by the assembly. One of the recommendations with two amendments reads as follows: "That standardized antigens and laboratory technics are essential to better case finding programs in brucellosis. It is therefore recommended that the conference communicate its interest to the Association of State and Territorial Health Officers for their considerations." Amendment 1 was "Recommended that this report be sent to directors of independent laboratories and to the American Society of Clinical Pathologists." Amendment 2 was "That only United States Department of Agriculture, Bureau of Animal Industry's antigen be recognized as the standard antigen and be made available for use in all laboratories of the country."

Points brought out in the meeting included: There are three known types of Brucella organism (a) Brucella abortus, commonly found in cattle, (b) Brucella suis, commonly found in hogs, (c) Brucella melentensis, commonly found in goats. All three infect man and all three may be found in other species of animal. Suis, for example, may infect the udder of a cow and in turn infect man.

Culture isolation of the organism is the only sure means of diagnosis. However, with the universal use of antibiotics it is a practical necessity to rely on the agglutination test. The antigen employed in making an agglutination test varies greatly. Strain 19 antigen was recommended and representatives of the bureau of animal industry said they could easily supply it.

Children seem to have a certain amount of immunity to the disease since it is most unusual to isolate the organism from their blood.

The disease is more common in the male because of the greater exposure rate.

The suis type appears to be the most virulent for man in this country.

A titer of 1:160 is of significance in most instances. However, about 40 per cent of all packing house employees will have a titer of 1:160 or higher without any clinical manifestations of the disease.

Statistics indicate that there is not as much chronic brucellosis in man as formerly believed. High agglutination titers tend to rapidly disappear, usually within a year.

Brucellosis is the greatest occupational disease of our farmers.

The highest rate of infection is found in packing house employees. Veterinarians share the second highest infection rate, and live stock raisers the third.

From July 1, 1950, to June 30, 1951, 298 (2.1 per cent) blood specimens of the 14,039 tested in state laboratories in Missouri gave a positive agglutination test for brucellosis. (Information presented by Dr. Price.)

Less than 25 per cent of the human cases are attributed to the consumption of raw milk and raw milk products.

When brucellosis is eradicated in animals it no longer will be a human problem inasmuch as the disease is not transmitted directly from man to man.

The successful control of brucellosis depends on an integrated attack by state and federal departments of agriculture, health departments, farmers and livestock raisers, packing house operators, physicians and others.

MISSOURI HOSPITAL PROGRAM

The Hill-Burton program, Public Law 725, in effect since August 13, 1946, has brought to Missouri $15,548,875.00 of federal funds which have and are building some $33,600,000.00 worth of hospital beds, teaching facilities and health centers. The Missouri program, entitled "Hospital Survey and Construction Program," is administered by the Division of Health. The mechanics of the program entail a great amount of detail as making a survey of some 245 different health facilities in the state each year in an endeavor to provide an equitable adjustment of priorities throughout the state for distribution of federal funds. This survey is the implement, which after approval each year by the Surgeon General of the United States, earmarks for Missouri the amount appropriated by Congress for Hill-Burton funds.

Missouri, in an effort to balance categories throughout the state, has succeeded in building and programming through 1952, the following type of beds and health facilities:

General beds built	909
General beds to be built	160
	1069

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Psychiatric beds to be built.....	180
	384
Tuberculosis beds built.....	None
Tuberculosis beds to be built.....	69
	69
Health centers built.....	2
Health centers to be built.....	2
	4
Chronic beds built.....	None
Chronic beds to be built.....	30
	30

CONFERENCE ON TUBERCULOSIS

The Mississippi Valley Conference on Tuberculosis and the Mississippi Valley Trudeau Society will hold their thirty-ninth annual conference at the Jefferson Hotel, St. Louis, on October 16, 17 and 18. Missouri physicians are invited to attend. On October 16 a session on "Public Health" will be held at 2:00 p. m. including discussions on "Community Organization for Mass X-Ray," "Follow-up and Evaluation of Mass X-Ray Surveys," "Special Problem Groups" and "Hospital Admissions." On October 17, Leopold Hofstatter, M.D., Koch, will discuss "Emotional Problems of the Chronically Ill"; John H. Skavlem, M.D., Cincinnati, will talk on "Research Dollars at Work," and Leonard Howard, M.D., and Edna Jones, M.D., Northville, Mich., will discuss "Problems of Tuberculosis in Children."

MISSOURI STATE MEDICAL SECRETARIES AND ASSISTANTS MEET

The Missouri State Medical Secretaries and Assistants met on Sunday, July 27, at the Bothwell Hotel, Sedalia. A program of music and entertainment was followed by a business session. Mrs. Nita Fabac, Kansas City, president, presided at the business session, and Miss Catherine Rand, Kansas City, secretary, gave the secretary's report, and Miss Edith Yager, Kansas City, treasurer, gave the treasurer's report. The next meeting will be held in Springfield on October 19.

MISSISSIPPI VALLEY MEDICAL SOCIETY TO MEET IN ST. LOUIS

Daniel L. Sexton, M.D., St. Louis, will preside as president at a three day meeting of the Mississippi Valley Medical Society to be held in St. Louis October 1 to 3. The meeting will convene at the Jefferson Hotel. There is no registration fee and Missouri physicians are invited to attend.

Among Missouri physicians who will appear on the program are W. Barry Wood, M.D., Arthur E. Strauss, M.D., William H. Olmsted, M.D., Paul Murphy, M.D., Carl V. Moore, M.D., William A. Knight, M.D., William G. Klingberg, M.D., C. Rollins Hanlon, M.D., Willard M. Allen, M.D., Henry A. Schroeder, M.D., Carl A. Moyer, M.D., Ralph A. Kinsella, M.D., Julius Jensen, M.D., Joseph A. Hardy, M.D., Goronwy O. Broun, M.D., Grayson Carroll, M.D., Robert W. Bartlett, M.D., St. Louis; Charles C. Dennie, M.D., Kansas City. J. William Thompson, M.D., St. Louis, will speak at a banquet on Thursday evening. Edward J. McCormick, M.D., Toledo, Ohio, President-Elect of the American Medical Association, will be the principle speaker at the banquet.

W. W. Bauer, M.D., Chicago, editor of *Today's Health*, will be the evening speaker at a meeting of the American Medical Writers' Association, which will convene on Wednesday.

BOOK REVIEW

DYNAMIC PSYCHIATRY BASIC PRINCIPLES (Volume One) by Louis S. London, M.D. Published by Corinthian Publications, Inc., New York, New York. Price $2.00.

This short book presents in clear and simple form the basic principles of the orthodox Freudian school. It should be useful to anyone taking up the study of that school.

There is an interesting chapter on the history of psychiatric thought from earliest times. L. B. A.

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RALPH A. REIS, M.D., Northwestern University; Author of "Diabetes in Pregnancy."
EDWARD A. SCHUMANN, M.D., University of Pennsylvania; Former President, American Gynecologic Society.
FRANKLIN SYNDER, M.D., Harvard University; Author of "Obstetric Analgesia and Anesthesia."

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Other Courses

GASTROENTEROLOGY—4 days, December 8-11

SURGERY—5 days, January 19-23

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George Crile, Jr., M.D.
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San Francisco

Arthur Grollman, M.D.
Dallas

Paul H. Holinger, M.D.
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(See page 778.)



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Adams, R. Charles (1951), Intravenous Administration of Pentothal Sodium in Combination with Other Anesthetic Agents and Methods, J. Missouri Med. Assn., August.

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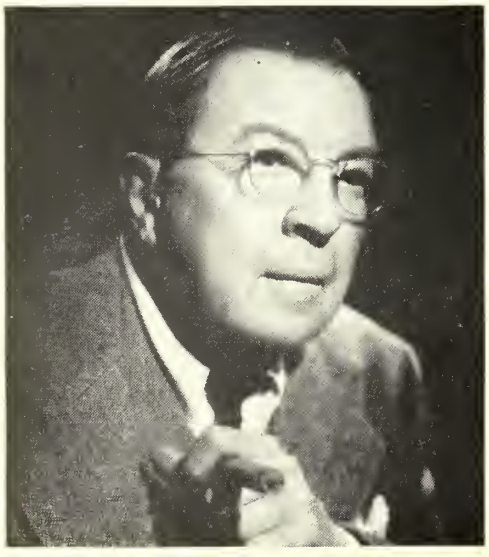
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Renal glycosuria is an anomaly of the physiology of the kidneys, often familial, in which the threshold of excretion of sugar via the kidneys is lowered so that despite normal blood sugar levels, glycosuria occurs. This glycosuria may be present following meals, following exercise or continuously. It is not of serious pathological nature.

Todd & Sanford, Clinical Diagnosis by Laboratory Methods, Saunders, 11th edition, 1948, p. 166

Pathologically Speaking

GLYCOSURIA

The presence of sugar in the urine does not always mean that the patient is suffering with diabetes mellitus, although persistent glycosuria is most likely due to diabetes mellitus.

Oftentimes, anywhere from a trace to a 2 plus reading for sugar will be obtained in urine excreted following anesthesia, after shock or associated with head injuries. If hemorrhage or injury occurs in the floor of the fourth ventricle, the patient is especially likely to show glycosuria.

Should the urine specimen be obtained after the patient has undergone the stress of anger or fear or anxiety (in some individuals the strain incident to a physical examination is sufficient), again sugar may be present, due presumably to the effect of increased epinephrine secretion in mobilizing liver glycogen to glucose.

In cases of hyperthyroidism and pregnancy, patients frequently spill excess amounts of sugar into the urine. As the hyperthyroid state is treated, the glycosuria clears. The sugar occurring during pregnancy and the post partum lactation period is most frequently lactose, a finding of no serious import.

Certainly, in any patient who shows glycosuria on two or more occasions, a glucose tolerance test should be done. If the test is performed properly, one has valuable information regarding whether the glycosura is really that of true diabetes or represents merely the result of a lowered renal threshold.

Normally, individuals do not show sugar in the urine until the blood level exceeds 180 mgm. In individuals with a lowered renal threshold, we may see as much as a 2 plus to 3 plus sugar in the urine, while the blood level does not exceed 130 or 140 mgm. All of us have seen patients who, because of the presence of sugar in repeated urine specimens, are diagnosed as diabetics without benefit of blood sugar studies, only to prove out later, after perhaps months or years of unnecessary dieting and fearfulness of the complications of diabetes, to be on the basis of a lowered kidney threshold.

Therefore, all cases showing repeated glycosuria should be evaluated in relation to blood sugar levels which exist at the same time that the urine samples are collected. For this purpose, the standard glucose tolerance tests are most useful.

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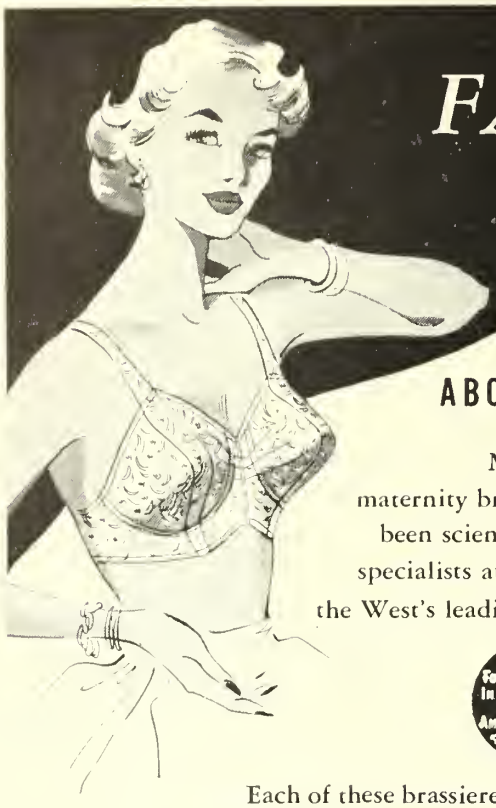
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Gallbladder Surgery, Ten Hours, tarting October 20.
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General Surgery, One Week, starting October 6.
General Surgery, Two Weeks, starting October 6.
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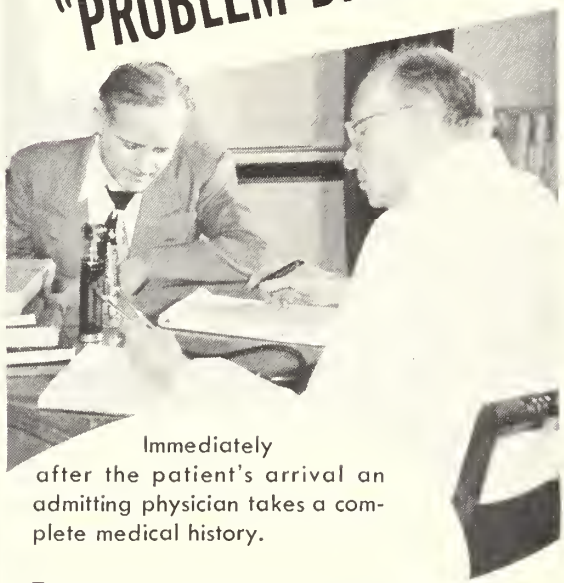
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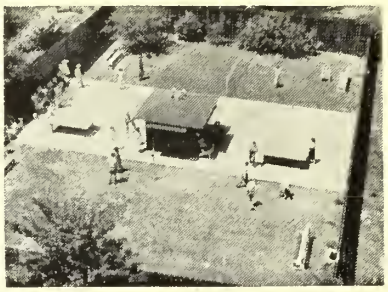
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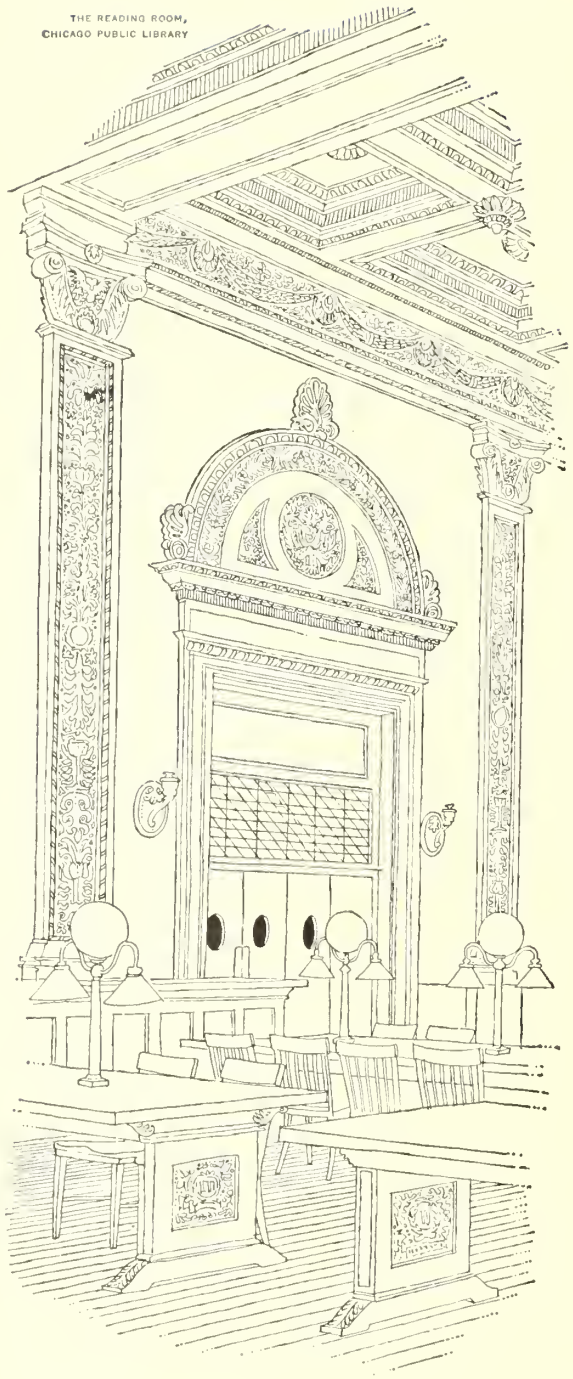
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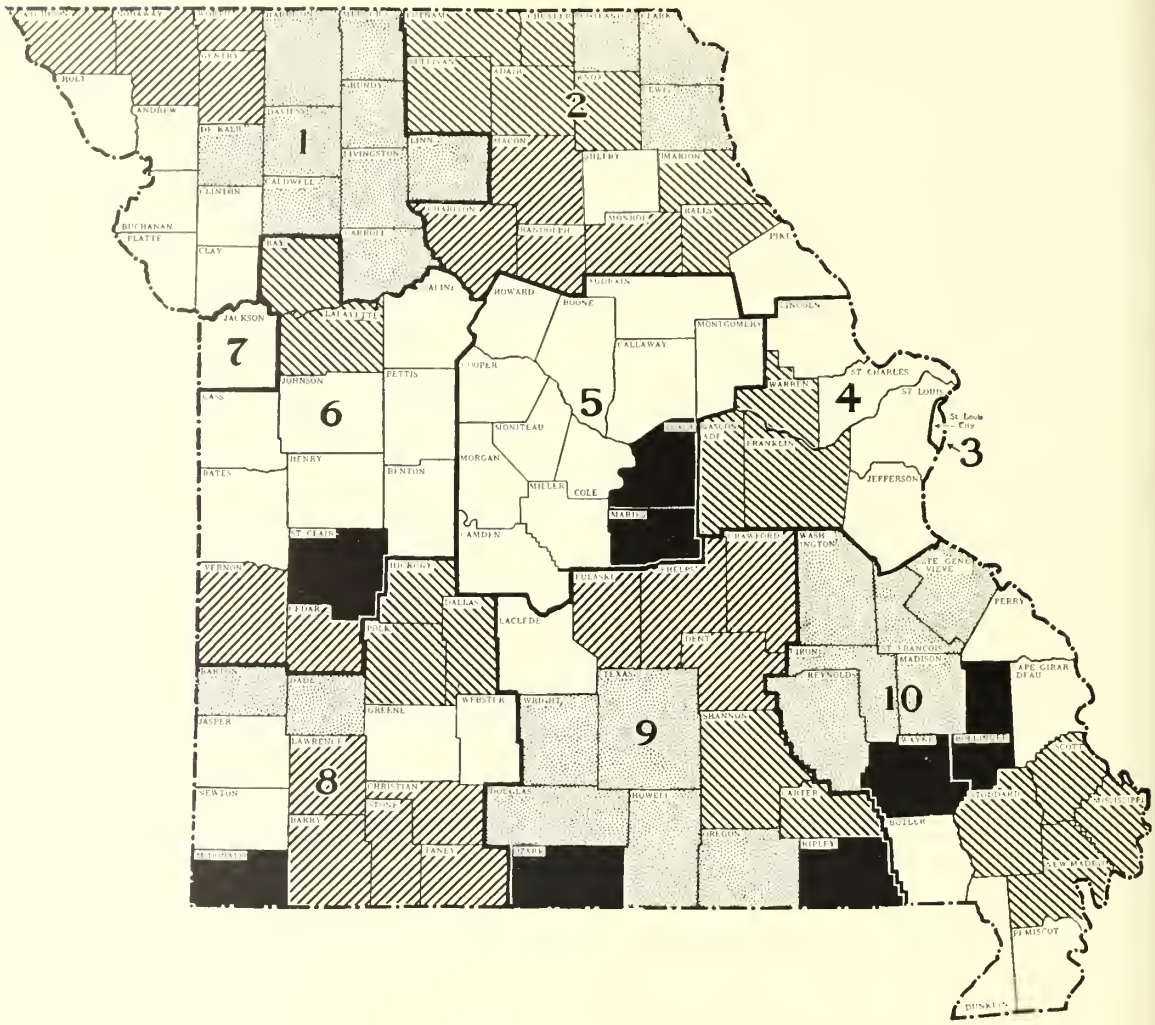
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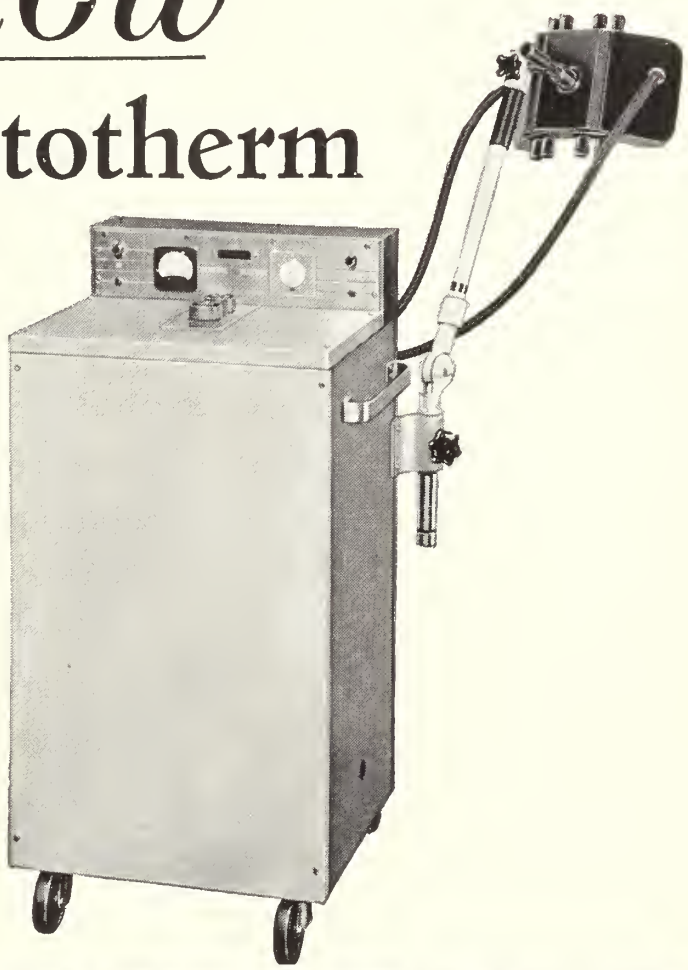
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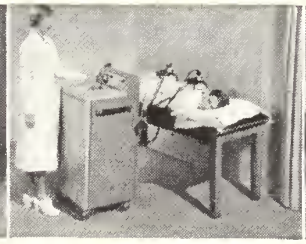
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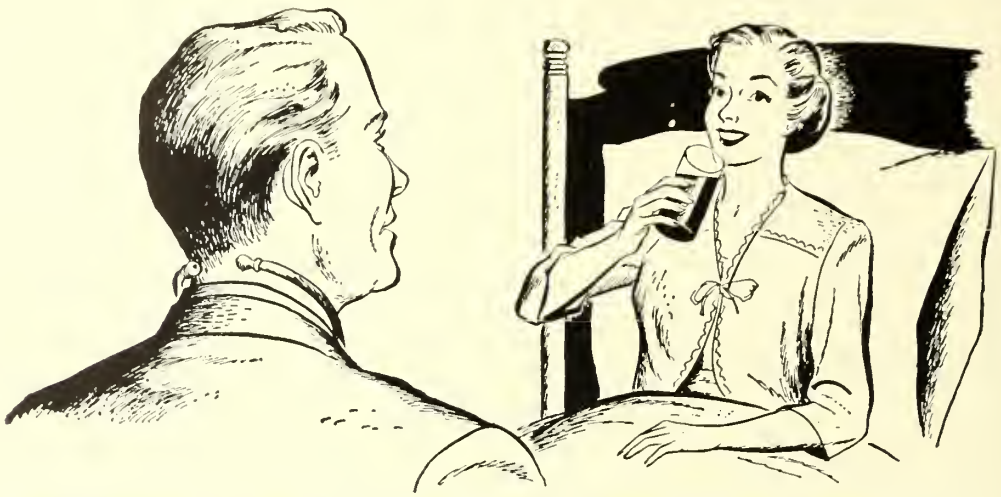
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Volume 49 October, 1952 Number 10

Scientific Articles

THE TREATMENT OF CANCER OF THE URINARY BLADDER WITH PARTICULAR REFERENCE TO CHOICE OF OPERATION

GERSHOM J. THOMPSON, M.D.
ROCHESTER, MINN.

THE SELECTION of an appropriate operation to be employed in eradicating a tumor of the bladder is a topic which has been discussed by urologists for many years. That the choice is not an easy one in all cases is commonly agreed. Some tumors are encountered in which any one of several procedures may be used successfully. The end result in these cases is a more important consideration than choice of operation. But one must keep in mind that the immediate postoperative condition of the bladder does not remain static. Therefore, results of any technic must be considered from a long range viewpoint.

It is common knowledge that tumors of the bladder tend to recur not necessarily in the area from which the original tumor has been removed but, usually, in an entirely different location within the vesical structure.

The treatment, therefore, of a patient with a tumor of the bladder must be considered in the light of this knowledge and, following the initial operation, repeated examinations at intervals must be made in order to find these recurrent growths in their incipient stage. They can then be destroyed by comparatively simple methods. If neglected, however, these small recurrent tumors usually grow to a large size; extensive and often hazardous surgical therapy might then fail to effect a cure. During the past several decades the urologist has led the way in calling attention to this stubborn tendency to recurrence and there are many patients living today who owe many additional years of life to the fact that they have cooperated and reported for appropriate survey when asked to do so. At times these patients become discouraged, even as do their doctors, but if they display equanimity the problem often can be resolved. However, without this cooperation the ultimate end is usually one of continuous suffering and finally renal insufficiency and death.

The importance of early diagnosis when the growth is small, and therefore presumably amenable to cure by comparatively minor procedures, has been emphasized repeatedly. It is unfortunate that some of these lesions cause no symptoms until they are far advanced or that the patient, because of fear or ignorance, neglects to see his doctor. It is also discouraging that sometimes patients may report their symptoms immediately and the growth may be found while it is quite small and treated vigorously or radically excised, yet malignant cells may spread throughout the body even while they are sprouting from the vesical mucosa. At such times cystoscopic examination merely identifies only a fraction of what is essentially a systemic disease. Any known method of treatment will fail in these instances but, fortunately, such patients form a small minority of the entire group.

It is not my purpose, however, to dwell at large on the vagaries of bladder tumors; rather, I shall enlarge on some of the methods of surgical therapy for the more commonly observed lesions and try to point out some of the advantages and disadvantages of the various types of operation. I should like to emphasize that no single method is superior to all others in every case. The application of the right procedure at the right time should be the aim of everyone treating these patients and, as previously stated, the choice of methods is not an easy one; nor is it always the right one in retrospect.

TOTAL CYSTECTOMY

In recent years a great deal has been written about complete removal of the bladder and diversion of the urinary stream by the use of either ureterosigmoidal anastomosis or cutaneous ureterostomy. At the Mayo Clinic during the years 1946 to 1950 inclusive this operation was performed on 117 patients (9.6 per cent of a series of 1,222 patients treated surgically). Thus cystectomy can-

Section of Urology, Mayo Clinic, Rochester, Minn.
Read at the 94th Annual Session of the Missouri State Medical Association, St. Louis, Missouri, April 2, 1952.

not be regarded as an operation which is applied infrequently or rarely. We have endeavored to advise this operation for those patients in whom the chance of cure was reasonably good and to employ transurethral operations supplemented with radiation therapy for those patients in whom a tumor appeared too extensive to be treated successfully by cystectomy. It is our belief that so-called palliative cystectomy should not be advised.

If a tumor has extended through the wall of the bladder into the perivesical fat it is almost a certainty that distal spread of malignant cells has already occurred which will not be reached by total cystectomy even though it includes dissection of the pelvic lymph nodes.

Jewett,[1] of Johns Hopkins University, has recently stated, "When the diagnosis is made late in the course of the disease, generally because significant symptoms have been disregarded for a period of time, the tumor usually will be deeply infiltrating. As previously pointed out, the five year survival rate following simple cystectomy or segmental resection for tumors of this sort is about 3 per cent." He stated further, "The more formidable procedures, such as radical cystectomy with resection of the lymphatic drainage area or perhaps pelvic exenteration, eventually may salvage a somewhat higher percentage of the cases in this group, but this is not certain since the survival rate with these procedures has not yet been determined. These operations furthermore may be found to result in a high incidence of postoperative disability. At present little can be offered a patient with a deep infiltrating tumor other than a certain degree of temporary palliation or an extensive pelvic dissection of unknown efficacy."

Experience at the Clinic coincides with that of Jewett and unfortunately we have found that, even though the perivesical tissues seem grossly soft and pliable, microscopic study of full thickness specimens of the excised bladder sometimes shows extension of malignant cells through the vesical wall and into the perivesical fat and lymphatics. The prognosis in such cases is of course not good.

If cystectomy is to be a curative operation it must then be applied before the tumor has infiltrated deeply into the wall of the bladder. Cystoscopic examination cannot always establish this point. In fact one might say that it never can and that at best any information gained from cystoscopy is inferential.

It has been our practice in recent years to employ cystectomy particularly in those cases in which biopsy shows a malignant lesion which is graded 3 or 4 (Broders' classification) and in which the edges of the growth are poorly defined when viewed cystoscopically. Bimanual examination of the anesthetized patient must also reveal that the bladder and perivesical tissues are freely movable and free of induration. Operation on a patient in whom there is palpable thickening of the perivesical or periprostatic tissues usually discloses fixation of the vesical wall to the surrounding pelvic tissues and biopsy in these instances usually indicates extension of the cancer. Therefore, other less radical but palliative measures should be applied.

One must also recognize the fact that some functional and physiologic adjustments must be made by those patients in whom cystectomy and uretero-intestinal anastomosis have been performed. A fair proportion of patients will have acidosis and a smaller number will suffer from recurring low-grade pyelonephritis that necessitates intermittent chemotherapy. A diet low in salt is usually advisable to avoid hyperchloremia. These patients often find it difficult to continue their previous occupations, especially if much physical exercise is required. However, this is not always true and some patients have been able to return to farm work or other strenuous activity. Sexual activity is generally impossible after the operation, probably because the seminal vesicles and prostate are removed in addition to the bladder.

The choice of cutaneous ureterostomy in preference to uretero-enterostomy has been made in a few patients at the outset and the procedure has been necessary in others at a later date owing to the development of stricture at the uretero-intestinal juncture. These patients do not undergo imbalance of the chemical constituents of the blood but they are sometimes resentful of their urinary fistulas and of the necessity of wearing something for the rest of their lives in which to collect urine.

The promiscuous use of total cystectomy on the assumption that other less radical operations will probably not be successful cannot be condoned. Some urologists argue that it should be employed in the presence of low grade tumors, especially if multiple tumors are found. I do not agree with this and prefer to use transurethral procedures in such cases.

SEGMENTAL RESECTION

The ideal patient for this operation is one in whom removal of an infiltrating tumor of the dome of the bladder will leave a bladder of essentially normal capacity. Occasionally tumors in this position are difficult to remove transurethrally and it is at times impossible to determine by cystoscopic examination how much of the bladder is involved. One should in any case have the patient so prepared that total cystectomy may be done even though it seems likely that segmental resection might be feasible. If the more conservative procedure is justified by finding a freely movable lesion of average size the simpler operation can be accomplished quickly and the extra preparation of the bowel has done no harm.

In the five year period of 1946 to 1950 inclusive

segmental resection was performed at the Clinic on sixty patients. In most instances the decision to use this operation in preference to cystectomy was made at the time of exploration rather than prior to it. In the occasional patient neither procedure was applicable because of perivesical extension of tumor; in such instances the incision was closed without opening the bladder and at a later date palliative transurethral resection was performed and supplemental radiation therapy used.

McDonald and I[2] studied the tissue removed from 274 patients with vesical tumor in whom all or a portion of the urinary bladder was removed along with the tumor. We found that only 5.2 per cent of these patients survived five years or more in those instances in which microscopic examination of tissue revealed that tumor cells had extended into the perivesical fat. These findings must be kept in mind and all perivesical fat adjacent to the lesion must be carefully removed. A search for involved lymph nodes is also worth while.

Segmental resection of a noninfiltrating pedunculated tumor with excision of a small cuff of normal bladder mucosa surrounding the pedicle is a justifiable operation whenever the tumor is in a position which renders transurethral removal difficult. Fixation of the hips or presence of a urethral stricture might also prevent a transurethral approach. In most instances from 1.5 to 2 cm. of normal mucosa provides a sufficiently wide margin; however, if possible, microscopic examination of frozen sections of the cut edge should be done to make certain that no tumor remains at the site of excision.

When a tumor is situated so close to the neck of the bladder that segmental resection will extend into it, the risk of a complicating postoperative suprapubic fistula is increased because of the likelihood of contracture of the vesical neck. In some cases in which this has occurred we have resorted to second stage transurethral resection of the vesical neck.

When tumor obstructs the ureteral orifice with resulting ureteropyelectasis or hydronephrosis it might become necessary, if segmental resection is employed, to implant the ureter into another region of that portion of bladder which remains. This operation increases the risk considerably and some of my colleagues at the Clinic have sometimes chosen to ligate the dilated ureter on the premise that the function of the kidney is already badly impaired and no matter what is done the kidney will eventually atrophy. I believe nephrectomy is a better procedure in such cases. There is always a chance that the kidney is infected and ligation of the ureter will add to the risk of postoperative fever, chills and toxemia.

Postoperative follow-up of the patient who has had segmental resection of a tumor must be continued at regular intervals for at least five years in order to guard against neglect of tumors which might recur in other portions of the bladder. Recurrence will develop in approximately 30 per cent of cases, in my experience. If these recurrent tumors are found when small they can be controlled by cystoscopic fulguration.

TRANSVESICAL EXCISION

In twenty-three patients during the interval from 1946 to 1950 inclusive transvesical excision of a tumor was done in preference to any other operation. In these cases the growth was considered too large to be removed readily by transurethral methods and it was not deemed necessary, when the bladder was opened, to excise a full thickness segment of the wall along with the tumor. A large pedunculated tumor with a long pedicle can be elevated or pulled away from the wall and, if the base of the pedicle is seen clearly, a portion of normal vesical wall at the point of attachment and extending perhaps half way through the muscle can be excised. The defect is then closed with interrupted sutures, thus also effecting hemostasis. Some urologists are reluctant to remove by the transurethral route pedunculated tumors that are larger than 2 or 3 cm. in diameter because they fear that uncontrollable hemorrhage might occur. Tumors of this type as well as broad based tumors which do not infiltrate deeply into the wall of the bladder can be excised transvesically by use of a cutting loop. The growth is planed away from the muscle and the excision must be sufficiently deep to include all of the base of the tumor. There are only two reasons for doing this operation through a suprapubic incision: the large size of the tumor or the inexperience of the surgeon. In most cases the better method is a transurethral operation.

The chief objection to transvesical excision of these tumors is the fact that many of the patients will develop recurrent tumors in other areas of the bladder and if these are to be controlled transurethrally it seems logical to take care of the first tumor in the same manner. However, as previously stated, the size of the initial growth may deter some urologists from attempting this.

TRANSURETHRAL METHODS

During the period from 1946 to 1950 inclusive, we elected to perform the operation transurethrally in 1,022 of the 1,222 patients who were treated surgically for vesical neoplasm at the Clinic. Of these, sixty-one had transurethral insertion of radon seeds. In 961 instances the tumor was excised with a resectoscope or removed with a cystoscopic forceps and the underlying area and bleeding points were thoroughly electrocoagulated.

It is also true that some of the patients who were finally subjected to segmental resection or to total cystectomy were treated for a time by transurethral methods which finally failed and

were considered inadequate. At first thought this might be considered to be a reflection on the person who made the first decision as to treatment. However, this is not a fact. No one has the capacity to predict the course that a patient with a tumor of the bladder will follow over a period of years. I have seen patients live for a dozen years or more after transurethral operation was performed for a highly malignant tumor of the bladder. They have experienced no recurrence or only an occasional tiny recurrence which appeared in some entirely different region of the bladder. During this time these patients have enjoyed the use of their bladder without any disturbance of metabolism and have been free from recurring infection of the urinary tract. To have immediately subjected such a patient to cystectomy would have been a tragedy.

It seems a certainty that transurethral methods will be applied oftener as experience with these procedures increases. Justification for their application whenever such use is technically possible is warranted by the preservation of a useful bladder of normal capacity, by less hazardous postoperative convalescence and by the quick return of the patient to his usual occupation free of the necessity for physiologic or functional adjustments.

Opinions will, of course, differ but the factors which I weigh before making a decision as to method of treatment are as follows: the age of the patient, his general condition, his probable life expectancy; the chance of cure (recognizing that in some cases palliation is the probable prime consideration); the accessibility of the tumor; the presence or lack of clear definition of the edges of the lesion, and the amount of functioning bladder wall which will remain after the surgical procedure.

The electroresectoscope has made transurethral operation for tumor possible in an increasing number of patients. Tumors of the posterior wall and dome even if they are flat and superficially infiltrating can be removed with this instrument. The loop projects beyond the end of the sheath and can be used to rake off the tumor in large strips. I prefer to use the Nesbit-McCarthy resectoscope to remove these flat types of tumor, particularly when they are located in the upper half of the bladder. For tumors in the vicinity of the ureteral orifices or for those on the trigone or around the neck of the bladder I prefer to use the Thompson resectoscope. The tumor in these locations can be engaged in the fenestra of the instrument and quickly cut away in multiple portions, the excision being extended well into the vesical musculature. During the early phase of removal with the resectoscope one must depend on the gross appearance of the tumor in order to distinguish it from the underlying tissue and from the tissue at the periphery of the lesion. When all grossly involved tissue has been excised the surgeon removes small portions of the vesical wall underlying the tumor. Frozen sections of these bits of tissue are examined microscopically to be sure that the resection has extended widely and deeply enough. If the pathologist reports the presence of tumor cells, additional strips of tissue should be removed from the base or periphery until histologic examination of the tissue no longer reveals evidence of malignant invasion or until the serosa of the bladder or the perivesical fascia is approached. The latter can be recognized by its filmy, cobweb-like appearance. Perivesical fat will sometimes be exposed.

In order to reach a tumor adequately it might be necessary to remove an obstructing portion of prostate gland. This does not particularly complicate the operation.

In some instances one cannot determine whether or not a transurethral operation is feasible until an effort is made to remove the tumor. In other words, one cannot be certain how deeply the tumor has infiltrated the wall of the bladder. Normal appearing vesical wall might be found after the surgeon cuts to a depth of 1 or 2 cm. If biopsies then disclose no tumor the chance of cure is good. On the other hand, if after excavating to a depth of several centimeters into the region of the tumor one still finds gross evidence of invasion, then it seems likely that the chance of cure from any surgical procedure including cystectomy is poor. The decision must then be made whether to go ahead with a radical procedure or to rely instead on partial transurethral excision and extensive radiation therapy.

RADIATION THERAPY

The implantation of radon seeds was carried out in sixty-one of these 1,222 patients. In a much larger number roentgen therapy was employed. No statistical data have been obtained concerning the exact number of patients who received roentgen therapy. A study of this kind is in progress and will be reported in the near future.

SUMMARY

Several methods of operation can be utilized for surgical treatment of cancer of the urinary bladder. Some are more radical than others and the method to be used in any instance must be chosen carefully.

Segmental resection of the tumor bearing portion of bladder or transvesical excision of the tumor without excision of the wall are suitable procedures in selected cases.

Total cystectomy and ureterosigmoidal anastomosis or cutaneous ureterostomy is the operation of choice in approximately 10 per cent of patients.

Total cystectomy must, however, be used cautiously because in many cases less radical procedures are curative. Furthermore, derangement in the chemical constituents of the blood which

adversely affect renal function occurs in a moderate number of instances. Recurring pyelonephritis is a complication which is frequently observed.

Transurethral operations for tumor can be successfully employed in the majority of instances. Radiation therapy should supplement surgical treatment in some of these patients. Cystoscopic examination at regular intervals for five to ten years must be done to guard against neglect of recurrence. If such recurrences are found when small, they can be controlled for many years.

Mayo Clinic.

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DISCUSSION

JAMES C. COPE, M.D., Cape Girardeau: In the discussion of Dr. Thompson's paper, I wish to emphasize two points. First, all of the procedures that Dr. Thompson has summarized for the treatment of bladder tumors are applicable in certain cases. It is only after the study of the characteristics and extent of the individual tumor that it is possible to reach some conclusion as to the type of treatment. Nowhere in medicine does the physician find himself more in the position of being between the Scilla and Chyribidis of doing too little or too much as he does in deciding the proper therapy for these tumors. The danger of leaving tumor tissue behind is always present, particularly in the less radical procedures. The danger of making the patient a semi-invalid by cystectomy and ureteral transplant is great. Many of these patients do well but there is the ever present danger of decreasing renal function due to repeated attacks of pyelonephritis, the dangers of hypercalcemia and uremia from resorption of urinary elements from the colon. It is not infrequent that a patient who has had a cystectomy will die from the results of the ureteral transplants and be entirely free of tumors. For this reason, I believe it is wise to try the less radical procedures if there is a chance of curing the patient. It is the experience of almost every urologist to have resected one of these tumors in the hope of some palliation only to find his efforts rewarded by a happy patient who lives for many years to die of some other disease before it is necessary to treat the bladder further.

The second point that I wish to emphasize is that many of these tumors are of multiple origin and that adequate treatment of the one involved area in the bladder does not preclude the possibility of the patient having another of these tumors develop in another part of the bladder. Once a patient has developed a papillary type of tumor, the chances are one in three that he will develop another. For this reason periodic cystoscopic examinations are mandatory. If this is done and the tumors found while still small, their treatment is small and occasionally may be done as an office procedure. To await the return of gross or microscopic hematuria is to neglect the patient. This propensity for forming tumors is not peculiar to the bladder, but is shared by the ureters and the renal pelvis as well. It is not uncommon to find papillary tumors of these structures several years after they have first made their appearance in the bladder. Again, for this reason, it is also mandatory that these patients be followed by repeated pyelograms as well as repeated cystoscopies.

Some experimental work is being done on the formation of an ileal bladder. This is done by forming a blind pouch from a loop of ileum and implanting the ureters into this pouch. The urine is collected in the Koenig Rutzen bag. While this work is still in the experimental stage, it appears that this procedure eliminates the difficulties which arise from the resorption of urine from the colon and also that the incidents of recurrence of pyelonephritis is appreciably less when this method is used rather than implanting the ureters into the intact colon.

I wish to thank Dr. Thompson for an excellent presentation.

HJALMAR E. CARLSON, M.D., Kansas City: The importance of early diagnosis of bladder tumors cannot be too strongly stressed. Only with the complete cooperation and vigilance of the internist and family physician who is in regular contact with his patients and their families, and who alone is in a position to refer the patient early, can the urologic surgeon achieve results of significance. I hope that all here today have listened carefully to Dr. Thompson's paper. It is exceptional as regards its clarity and depth of perception in the proper management of bladder tumors. Tumors have been treated by complete cystectomy, by segmental resection of the bladder, by suprapubic excision of the tumor with high frequency dissection, by means of radiation and by transurethral excision with or without radon. On occasion future follow-up has necessitated a change in the surgical care of the patient. When such change has been made the best interest of the patient has been the prime consideration both as regards comfort and cure.

The percentages of the various operative procedures summarized by Dr. Thompson is in general comparable to my own series of bladder tumors with the exception of the number of total cystectomies. In my own private practice in Kansas City the number of total cystectomies necessary has been somewhat lower than in Dr. Thompson's series, and the number of segmental resections performed proportionately greater. This, perhaps, is due to the fact that I have the opportunity to see my patients at an earlier stage than those seen by Dr. Thompson. At a large institution more advanced cases are more likely to make their appearance. On the other hand, perhaps I have been more radical in the performance of segmental resection, believing that a small bladder is better than none even though from one half to two thirds of it has been removed. Although a large portion of the bladder may have been removed, the remaining portion will gradually dilate so that in a period of from six to twelve months the bladder will have practically regained its original capacity. I have used segmental resection for tumors in the dome of the bladder, tumors of the lateral and posterior walls, and for tumors situated in diverticula, of which I

have had several. I have extended segmental resection freely about the ureteral orifices, reimplanting the ureters at will with good results. The importance of adequate excision with several centimeters of normal bladder wall in all directions has been distinctly emphasized by Dr. Thompson. The excision of local lymphatic channels and local lymph nodes is a sound surgical procedure and I have continued to employ this procedure but more and more extensively. In addition, radium needles have been implanted in the perivesical tissue in an attempt to destroy such cancer cells as may have been missed at the time of operation. No untoward results have as yet been observed from this procedure.

The treatment of the more extensive and infiltrating bladder tumors continues to be a challenging one. The treatment of the noninfiltrating and less extensive tumors is generally satisfactory; however, the continued assistance of the family doctor is most earnestly requested by every urologic surgeon in securing the necessary regular follow-up cystoscopic examinations on these patients no matter what urologic procedure may have been performed.

RESPIRATORY ALLERGY

HERBERT J. RINKEL, M.D.
KANSAS CITY

The important clinical forms of respiratory allergy include seasonal and perennial nasal allergy, bronchial asthma and a number of manifestations of allergy in the pulmonary area, which do not fulfill the criteria for diagnosis as bronchial asthma. These symptoms and syndromes include some forms of "chronic bronchitis," "chronic cough," "acute cold with asthma" and some attacks of "atypical bronchial pneumonia."

My discussion is limited to certain features of these forms of respiratory allergy.

I. THE DIAGNOSIS OF RESPIRATORY ALLERGY

There are two distinct diagnoses to be made in respiratory allergies. The first is that of the clinical syndrome and the second is that of the specific etiologic agents. The first of these is an immediate and unusually simple diagnosis. The second is more often than not a prolonged and detailed procedure.

II. THE PRIMARY DIAGNOSIS

The history may be highly suggestive, but is not conclusive. The most important points in the history are (1) familial allergies, (2) seasonal factors, (3) the occurrence of typical symptoms either in intermittent attacks or monotonously continuous. When these manifestations are analyzed it will be found that the patient is subject to acute exacerbations which persist from eighteen hours to three or five days. These attacks will often develop in the middle of the night or when the patient first arises. In the case of nasal allergy the symptoms are sneezing, watering of the nose, blocking and "frequent colds" or "sinus trouble."

In asthma the manifestations will be wheezing, coughing, expectoration of frothy or purulent sputum and dyspnea. If looked for with care, one will find in most patients with respiratory allergy, gastrointestinal symptoms of bloating, hyperacidity, retasting of foods, excessive flatus and attacks of diarrhea.

The diagnosis of bronchial asthma cannot be made with certainty on auscultation of the chest, irrespective of the type of history and the presence of rales in the chest, unless there are multiple musical rales of varying frequencies (pitch). Patients with pulmonary allergy frequently do not have these typical rales and when this is so, the diagnosis must be provisional even though the history is highly suggestive. However, in the presence of rales without the typical characteristics of bronchial asthma, one should explore every possibility for such rales as well as that of allergy. This rule of diagnosis may be subject to error, but during the last twenty-five years it has been one of the most valuable criteria in the differential diagnosis of the chest symptoms.

Wheezing may be heard at times in the midclavicular line about two inches below the clavicle when not heard at any other place.

Respiratory allergy of the nasal type will vary from being easier to more difficult to diagnose. It will be easier in the strict seasonal manifestations. It will be more difficult in the perennial forms, where it is often if not in the majority of the cases diagnosed as "recurrent colds" or "chronic sinus disease." These allergies should all be considered as perennial nasal allergy and subdivided according to locale of reaction and the types of symptoms.

The differential diagnosis between a true cold and nasal allergy simulating a "cold" or "sinus infection" may not be an easy one. One should not attempt it without a period of clinical observation.

The physical findings of enlarged, blue gray turbinates and the presence of excessive nasal secretions are highly indicative of allergy. If these findings are corroborated by nasal eosinophilia[3] the diagnosis is possible. Often eosinophilia is not found. The history and character of typical attacks is important. These have been outlined in full in a previous paper[1a] but the important features will be given herewith.

The following features are in favor of allergy: (1) seasonal repeated colds, usually from October to April, (2) the attacks are limited to one member of the family (if more than one is affected, the attacks do not show the typical epidemic pattern), (3) the occurrence of clear nasal secretions for from thirty-six to forty-eight hours before the purulent stage develops, (4) temperature does not develop until the secretions are purulent, (5) if there is but one exposure to the antigen (usually

Presented at the 94th Annual Session of the Missouri State Medical Association, March 30-April 2, 1952, St. Louis.

the case when the patient calls the attack a "cold"), it will subside in five days (when the etiologic factor is contacted daily or at intervals of less than seventy-two hours, continuous purulent secretions and afternoon temperature may occur), (6) there are both night sweats and perspiration upon exertion.

In favor of a primary infection are: (1) occurrence of colds in epidemic form, i.e., running through all members of a family, (2) purulent secretions and temperature develop soon after onset of nasal symptoms, (3) temperature lasts longer, (4) there are systemic symptoms of malaise, muscle aching and lassitude, (5) the duration is often ten to fourteen days, (6) Bryan[1] states that there are degenerated ciliated cells in nasal smears with infection; none have been found with allergy.

It should be stressed that the occurrence of temperature, purulent nasal or lung secretions are not evidence of infection per se. I have seen fever of 105 F. occur in the sequential development of a reaction to Irish potato. Asthma began with this "cold" forty-eight hours after ingestion of potato. In this connection one should emphasize the clinical pattern of reaction when patients report asthma with a "cold." If these attacks are fully analyzed, one will find that the patient had nasal symptoms for two days, then they developed a "chest cold" and started to wheeze. This is not only a typical manner of beginning asthma, but also for the recurrence of attacks. Look for the etiologic factor just before the onset of nasal symptoms, not just before the onset of the asthma.

It is obvious that when infection is evidenced by purulent secretions and temperature, it is of no immediate concern as to whether it was precipitated by allergy or resulted from an epidemic infection. The infection should be treated as such and if allergy be suspected it can subsequently be investigated in order to prevent recurrence of attacks. The repeated usage of either antibiotics or sulfa drugs are often progressively less effective in relieving the allergically induced "infections."

It should be apparent from this discussion that there is an important problem in clinical practice of differentiating some forms of respiratory allergy and infections. Allergy should be included in the differential diagnosis when studying patients with repeated colds or sinus infections.

Over a period of seven years I deliberately induced "sinus infections" and "colds" in a series of patients. They were examined by a competent otolaryngologist. It was not possible for him to determine by routine office examination that these attacks were deliberately induced and not spontaneous infections. In only one instance he was not sure whether the patient had an infection or an allergic reaction.

It has long been known that allergic therapy reduced "colds." Hansel[3] emphasized this years ago and it has been the experience of many allergists. However, the attempt to correlate the causative factors and to reproduce these attacks at will over a long period of time had not been done. My findings indicated that the following are essential factors in the production of a "cold" or "acute bronchitis." (1) Attacks may be due to either inhalants or foods. (2) Attacks are related to specific foods, not to all foods causing nasal or chest allergy. (3) There are distinct seasonal (winter) occurrences of symptoms. This is due to two factors, first, dust becomes more important in winter and, second, many patients are affected by critical drops in temperature. (4) It has been possible in many patients to eliminate susceptibility to temperature changes by minute doses of histamine.

III. MODES OF ONSET OF ASTHMA

Some patients will have their initial symptoms of asthma at the end, not at the peak, of the ragweed season. The factors responsible for this are several, but two are important. Many patients can withstand the high pollen counts on the warm days, but not the reduced ones when cooler nights develop. Second, as the nights become cooler house dust allergy becomes much more important. There is a high degree of synergistic effect between house dust allergy and pollen sensitivity in certain patients.

Another common initial occurrence of asthma is its development following influenza, colds, both true and false, and sinus infections. Influenza is well known to precipitate asthma in susceptible patients.

It is a common belief among allergists that seven out of ten untreated pollen sensitive patients eventually develop asthma. During the last few years the seasonal control of pollinosis by means of the antihistaminic drugs, in my experience at least, has resulted in a marked increase of patients with seasonal asthma.

IV. DIAGNOSIS OF SPECIFIC ALLERGENS

The determination of the specific etiologic agents is divided into three main parts: first, is that of the history; second, is that of skin testing for foods and, third, testing for inhalants.

Skin testing for foods is not more than 20 per cent diagnostic. One should never use skin tests for food unless he is prepared and willing to supplement such procedures with clinical diagnostic methods.

Individual food testing is highly accurate when interpreted in terms of all phases of the test. The important feature in food diagnosis is to establish a period of time in which the patient is symptom free and is upon a known diet. The diet is then increased with due consideration of the various factors which affect food allergy manifestations.[4b]

The diagnostic accuracy of inhalant testing is high. It is possible to average more than 90 per cent accuracy in such tests when they are adequately and properly performed.

Studies in my office have shown that inhalant

diagnoses should consist in determining not only the antigen to which the patient is sensitive but, also, the degree of that sensitivity. There are patients who are negative to certain pollen groups except in the season when they are having symptoms from such antigens.

The determination of the degree of sensitivity is done by testing[3, 4c] with various dilutions which may vary from one to five billion to one to one hundred.

In using these tests it has been found that patients differ greatly in their degree of sensitivity to several antigens. It has been found necessary to treat the patient in terms of his current degree of sensitivity.

It has been found that 21 per cent of patients increase in their degree of allergy with treatment, 36 per cent show no change and 43 per cent have a decrease in sensitivity.

Another feature of importance is the relationship of house dust allergy to seasonal pollinosis. This has been found to be of such importance that all patients are checked as thoroughly with dust as with pollen.

The prime purpose of this detailed, but not necessarily complex, method of testing is to establish a correct beginning dose. One cannot establish the optimum dose by this or any other test procedure. Some patients will obtain their optimum results in therapy with but 0.05 cc. of the dilution which is just capable of giving a positive test, others will require 0.50 cc. of this same dilution. It has been found that a number of patients whom I thought to be suffering from some rare pollen, actually where affected only by ragweed but their optimum dose had not been determined.

The optimum dose can be discovered only in the pollen season. It is evidenced by the fact that a definite degree of relief occurs within one to four hours after therapy. When it requires one to two days after an injection for the patient to improve, the dose is greater than the optimum. Relief will be more distinct and rapid in the nasal allergies than in the pulmonary types.

There is a considerable range between the optimum dose and a dose which produces a systemic reaction.

V. MAJOR AND MINOR POLLEN

A major pollen is one whose numerical seasonal incidence is relatively high. A minor one has a low total count. One might arbitrarily say that a seasonal count of 300 or more indicated a major pollen and those below this number would be classed as minor. In correlating plant life and symptoms of patients it has been found that the usual pollen slide is not a good criteria of the clinical importance of minor pollen. This is particularly true of tree pollen.

VI. PRIMARY AND SECONDARY POLLEN

A primary pollen might be defined as one which initiates a seasonal occurrence of symptoms. There may be one or more such pollen.

A secondary pollen is one which the patient contacts—is skin sensitive to it but it fails to initiate a sesonal occurrence of pollinosis. Two patients may be skin sensitive to ragweed, pigweed and kochia. One has no symptoms until August 15. The second patient has slight but definite symptoms starting July 14 (pigweed), a distinct increase on July 24 (kochia) and severe hay fever August 15 (ragweed). The second patient has three primary pollen sensitizations, the first only one.

It is best to treat the patient with all air borne products to which he is sensitive and which are in the air during the period of his respiratory symptoms.

VII. THE EFFECT OF FOOD ALLERGY IN INHALANT THERAPY

Eyermann[2] was among the first, if not the first, to show the importance of diet in seasonal pollinosis. Food sensitive patients are prone to have nasal symptoms which continue when the ocular manifestations of pollinosis have been relieved by treatment. Food sensitive patients do not receive the same period of relief with optimum doses as do patients who have no food allergies. Food does not produce limbic conjunctivitis, a differential point in evaluating cause and therapy. If foods are omitted which were in the diet during testing, there may be a drop in the degree of sensitivity. In such cases the pollen dose must be increased after the food is eliminated.

VIII. CONCLUSIONS

1. Respiratory allergy may manifest itself as seasonal or perennial nasal symptoms, bronchial asthma and some forms of "chronic bronchitis," "chronic cough" and atypical "bronchial pneumonia."

2. Allergy should be included in the differential diagnosis of patients with recurrent colds and chronic sinus infections.

3. The primary diagnosis of bronchial asthma should be tentative in the absence of multiple expiratory musical rales of varying frequencies.

4. Skin testing for foods is not more than 20 per cent diagnostic and should be supplemented by other diagnostic means.

5. Skin testing for inhalants is highly accurate when done so as to determine not only the specific antigen, but also the degree of the sensitivity. Sensitization will vary in different seasons, hence rechecks are necessary.

6. The modes of onset of asthma have been indicated.

7. The division of pollen groups into major and minor, or into primary and secondary are not strictly applicable to specific therapy. It is best to treat patients in terms of their sensitivity and their exposures.

8. Food may prolong seasonal pollen symptoms when pollen therapy is correct.

9. Treatment with multiple inhalants should be carried out in terms of the degree of sensitivity to each antigen, not with empirical formulas in which all products are of the same antigenic strength, or differ so little as to be ineffective.

10. Optimum inhalant doses produce some distinct relief soon after injection. When the interval is prolonged, the dose is usually too strong.

11. The ideal in inhalant therapy is to treat the patient in terms of today's degree of sensitivity. This may be done by the clinical use of skin titration.

2005 Bryant Building.

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DISCUSSION

T. HARRY SAFERSTEIN, M.D., St. Joseph: As always, I have greatly enjoyed the paper presented by Dr. Rinkel, and feel that in addition to adequately covering the subject, he has offered something new in the method of treatment of the inhalant sensitive patient.

A point in Dr. Rinkel's paper that I feel might bear repeating for emphasis is that multiple musical rales of varying pitch must be present before a diagnosis of bronchial asthma can be made.

Skin titration as a means of determining the initial treatment dosage is worthy of further discussion and thought. I would like to cite some examples to illustrate the advantages of this method.

Case 1. A white woman, aged 50, with history of ragweed hay fever and asthma of about fifteen years duration had taken desensitizing shots on three previous occasions with marked constitutional reactions during the preseasonal treatment, and no relief when the ragweed season arrived. The only relief she had obtained previously was by taking an ambulance from the hospital to a westbound train. In Denver she was partially relieved. On testing, preseasonally, the end point of reaction was found at a dulution of 1 to 300,000. This high degree of sensitivity more than likely accounts for her constitutional reactions with previous forms of treatment. At the height of the ragweed season she developed some slight trouble. Retesting showed an increase in sensitivity, the end point being at a dilution of 1 to 40 million. Of this dilution 0.15 cc. gave complete relief for a period of five days and she was carried through the season with injections at this level. This indicates the efficacy of this method of titration in the highly sensitive patient in achieving adequate relief in season and in avoiding preseasonal constitutional reactions.

Case 2. A white male, aged 36, with history of chronic cough for ten years had paroxysms of coughing which awakened him at night, also severe coughing each morning. He had various medical treatments through the years and a tonsillectomy a year ago with no relief. He had had no previous allergic treatment. Testing of this patient proved a little disappointing. A patient with a severe allergic cough of long duration showed little sensitivity. He reacted only to Endo house dust, at the strongest test solution 1 to 1000, and to Alternaria 1 to 100 and to Hormodendrum 1 to 100. He was given 0.10 cc. of each of these substances that afternoon. I was awakened early the next morning by the ringing of the telephone, my early morning caller being the patient of the day before who wished to inform me that for the first time in ten years he had slept through the night and had no coughing in the morning. If this patient had been treated with a standard method of starting with a small dose and increasing until relief or tolerance had been reached, it probably would have taken twelve to fifteen shots to reach the dosage given him on the first visit. This patient has been adequately relieved of symptoms with one desensitizing injection approximately every four weeks.

Case 3. A white female, aged 23, had had asthma since 3 months of age. In all her life she could not recall a day that she did not have to take some medicine for relief. In testing it was found she was sensitive to every inhalant factor of importance in the area, each end point reaction being at a different dilution level. A mixture of all these factors, each adequately balanced, was prepared for this patient. She received some relief from her first injection and had complete relief when the dosage had been built up to a higher level. This patient is still under treatment and has not had an attack of asthma for the past two years.

Case 4. In another patient, a white female, aged 62, with history of chronic cough of nineteen years duration an extremely narrow range of dosage that would produce relief was found. She was relieved with 0.25 cc. of endo dust 1 to 25,000, but no relief was obtained with either 0.20 cc. or 0.35 cc. of the same dilution of dust.

MANAGEMENT OF ACUTE LEUKEMIA

PETER G. DANIS, M.D.
ST. LOUIS

ACUTE "STEM CELL" or "blastic" leukemia is a form of malignant disease characterized by the overproduction in the bone marrow of primitive cells too embryonic in most instances to be designated lymphoblast or myeloblast when examining a stained slide of material from a bone marrow puncture. It is called acute because the patient follows a severe cachectic, febrile course with marked anemia to a rapidly fatal outcome. In this form of leukemia the peripheral blood

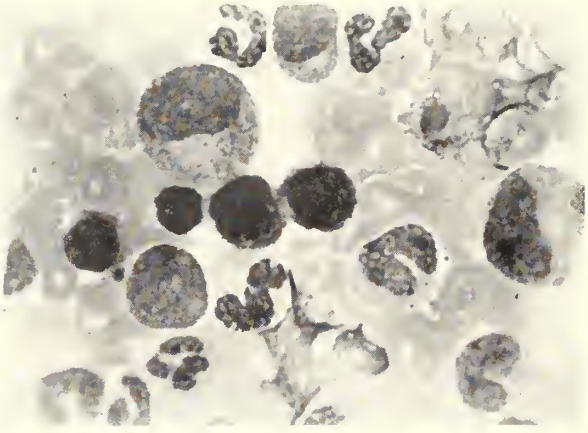


Fig. 1. Normal bone marrow.

picture is not as significant in its type of white blood cells as it is in most instances in the lack of white blood cells. It is a disease pertinent to

Presented at the 94th Annual Session, Missouri State Medical Association, St. Louis, March 30-April 2, 1952.

The author wishes to acknowledge the advice in the use of ACTH given by Dr. James King, assistant to Dr. Sidney Farber at Boston's Children Hospital, Harvard University, and to the Lederle Laboratories for the supply of aminopterin for investigative purposes, as well as the assistance of Sister Yvonne and Sister Leo Rita of the Sisters of St. Mary of the Angels; Dr. Seymour Schlansky, and Dr. John Babich in the preparation of this paper, and the physicians whose patients have been presented and discussed.

the physician caring for children since it is the most common form seen in the young child. It is particularly important to the physician in the small as well as the large community as there appears to be a greater proportionate incidence in rural areas. It is this type of leukemia in which some observations, limited as they are, seem

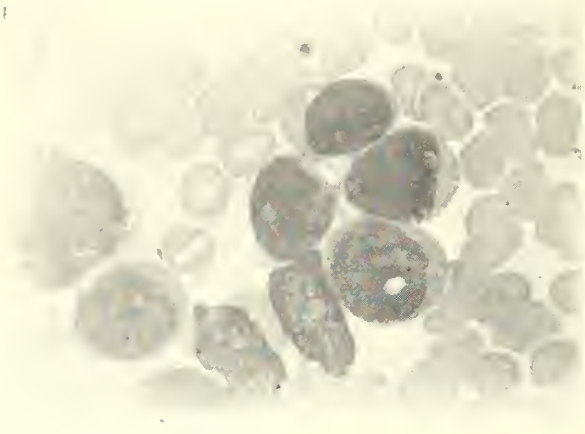


Fig. 2. Acute leukemia.

worthy of presentation and discussion. This is particularly of interest at present because of the recently developed means of alleviating symptoms and prolonging life.

The etiology of the disease is still unknown. The pathology is that of replacement of the normally maturing elements of the hemopoietic system with nondifferentiating primitive cells (see figs. 1 and 2). Into St. Mary's Hospital have come forty-eight cases in the last twenty years. Twenty of these have been from St. Louis, five from St.

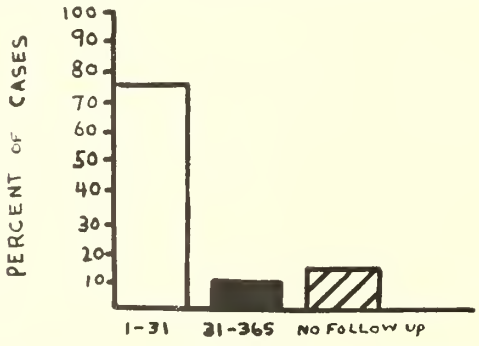


Fig. 3. Days of survival after initial hospitalization.

Louis County and twenty from the immediate rural areas of Missouri and Illinois.

Into St. John's Hospital have come thirty-three cases of which twenty have entered from the surrounding rural areas. This means that of a total of eighty-one cases, forty-five were from outside St. Louis proper. To further corroborate this, the record room files from 1943 to 1952 at St. Louis City Hospital were checked and only three cases are recorded in children less than 12 years of age.

If one considers the relative lesser density of population in the rural area as compared to the city, a 55 per cent incidence outside the city is apparent and the importance of its consideration is enhanced. It may well have some significant relation to the etiology, particularly if the disease is ever demonstrated not to be a true malignancy but an invasion of the bone marrow by some outside agent.

These patients entered the hospital most fre-

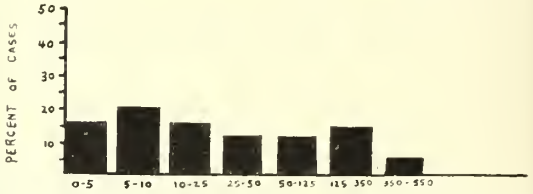


Fig. 4. Erythrocytes expressed in millions per millimeter. Hemoglobin expressed in percentage.

quently with the complaint of loss of appetite and malaise over a period of from six weeks to two months, and often with bleeding gums or history of nose bleeds along with enlargement of lymph glands somewhere in the body, most frequently in the neck. Ten per cent of the patients have severe joint or extremity pains suggestive of rheumatic fever. They are always

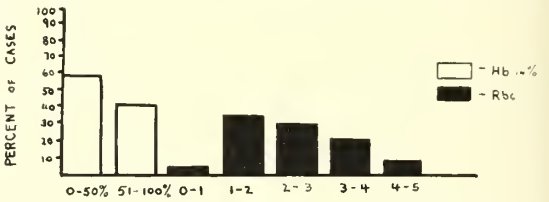


Fig. 5. Leukocytes expressed in thousands per millimeter.

content to lie around and are noticeably pale. After hospital admission, our patients, up to 1951, had a life span which varied from a few days to two months, with two exceptions who have lived six months (see fig. 3). They all enter the hospital with anemia of varying degree (see fig. 4). They do not have a characteristic total white count but a differential (see fig. 5) with 80 per cent or more lmyphocytes or, in other words, an agranu-

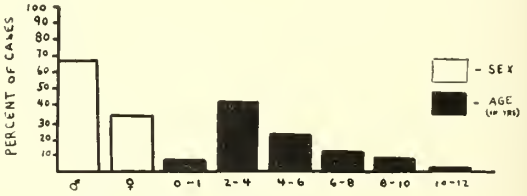


Fig. 6. Incidence of age and sex.

locytosis. There are two boys affected for each girl (see fig. 6).

No treatment had any appreciable effect on the bone marrow picture, the peripheral blood picture or the major physical findings or symptoms of these cases previous to 1949. In 1950, two

patients were given aminopterin without any desirable influence and for insufficient a time to evaluate the drug. During 1951, three patients were repeatedly treated with antibiotics, ACTH, cortisone and aminopterin, as well as with other minor medications, with a marked alleviation of symptoms and physical findings for prolonged periods. The following, chronologically, are the résumés of these case histories.

CASE HISTORIES

Case 1. R. K., aged 3 years, male, entered St. Mary's Hospital on September 29, 1951. The patient was pale and in respiratory distress on admission. The parents stated that the boy was well until three months prior to admission when he began to lose weight, tired easily and began to bruise easily. One week before he had been placed in the local hospital by the family doctor where he received two transfusions. The parents themselves were well and had no other children. There were no previous serious illnesses in the family.

On physical examination the patient was found to have numerous areas of purpura on the body and the skin was strikingly pale. There was evidence of recent blood in the mouth and the tongue was coated heavily. The nares showed clotted blood. There was enlargement of the lymph glands on both sides and the anterior neck. The heart rate was rapid but there were no other pathologic findings in the chest. The spleen was palpable two fingers below the costal margin and the liver was palpable to the costal margin. The white blood count was 1,850, the red blood count 2,700,000, Hb. 9 gms., peripheral blood smear showed 98 per cent lymphocytes, and the platelet count was 16,000.

A bone marrow specimen was obtained by aspiration and revealed 80 per cent lymphoblasts per field (see fig. 2). A cut down was performed on the left ankle and a cannula inserted for continuous intravenous medication. Ten mg. of ACTH was added to 500 cc. of water and given intravenously over a period of twenty-four hours. The blood pressure rose to 200/16. Medication was discontinued for twenty-four hours. Five mg. of ACTH was added to 500 cc. of water and given by continuous drip daily for ten days. Three days after administration of ACTH began, the child began to smile, eat and expressed the desire to sit up. The oral hygiene had improved markedly and the purpura was disappearing from the skin. On the ninth day, the liver and spleen were not palpable. The peripheral blood picture remained essentially the same. A bone marrow aspiration examination on the ninth day showed a drop in lymphoblasts to 70 per cent. The patient was placed on aminopterin, .5 mg. by mouth, daily. Transfusions were administered on two successive days and on the fifteenth day of hospitalization, four days after ACTH was discontinued and the fifth day after the beginning of aminopterin medication, the bone marrow obtained by aspiration showed a drop in lymphoblasts to 10 per cent (see fig. 7). The patient was discharged on supportive vitamin therapy and .5 mg. of aminopterin every other day. This was on October 18 and the white blood count was 5,450, red blood count was 3,940,000 and the Hb. was 13 gms., the platelet count was 80,000, and the differential count was recorded as 49 per cent lymphocytes, 42 per cent segments and 9 per cent stabs. Repeated outpatient observation of the patient revealed no further symptoms of physical findings until December 1, at which time the peripheral blood smear showed 80 per cent lymphocytes and the red cell count dropping in a week to 2,500,000. At that time the child had a temperature of 103 F. and acute pharyngitis.

Hospital admission was again recommended and

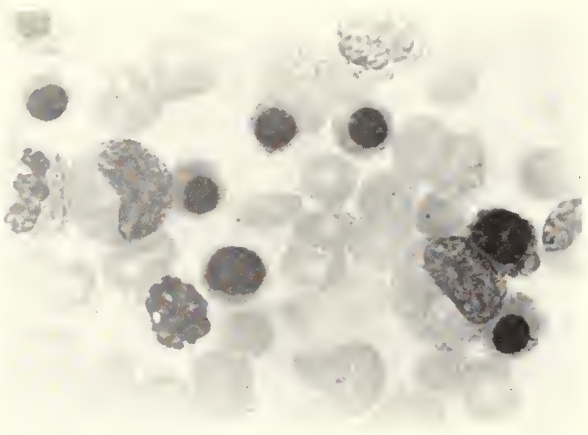


Fig. 7. Bone marrow remission.

was refused by the family. The child died three weeks later of acute leukemia.

Case 2. S. S., aged 3 years, was admitted to St. Mary's Hospital on February 19, 1951, because of pain in the feet and listlessness for two months. The child had been taken to the clinic and studied for possible rheumatic fever and then referred to the hospital. There was nothing of consequence in the past family history.

Physical examination revealed a pale, listless female with a temperature of 103 F. The patient was found to have cervical and inguinal lymphadenopathy, spleen extending two fingers below the costal margin and a slightly palpable liver. The red blood count was 2,630,000, Hb. was 9 gms., white blood count was 5,800, the platelet count was 65,000 and the differential smear showed 94 per cent lymphocytes. Bone marrow aspiration performed on February 20 was reported as 80 per cent lymphoblasts per field (see fig. 2).

The patient was given blood transfusions and vitamins. A blood chemistry study revealed a sodium of 135 and a potassium of 3.6 and uric acid 2.5. The patient was given 15 mg of ACTH intramuscularly every six hours for ten days, 10 mg. of ACTH intramuscularly every six hours for four days, and 5 mg. of ACTH every six hours for another sequential five days. During the course of ACTH therapy the child's appetite improved as well as her activity and sense of well being.

On March 15 her red blood count was 4,650,000, Hb. 12 gms., white blood count 9,150, and differential smear showed 50 per cent lymphocytes, 40 per cent segments, 6 per cent stabs and 4 per cent monocytes. The spleen was no longer palpable and the adenopathy had decreased markedly. However, bone marrow examination at that time still revealed 80 per cent lymphoblasts (see fig. 2). The child was discharged at that time from the hospital with a clinical regression of acute leukemia but without bone marrow remission. The child was observed in the Outpatient Department satisfactorily.

On June 20, the patient was readmitted to the

hospital with enlarged, tender glands in the neck and cheeks. There were petechial spots over the body and there was marked loss of appetite and apathy.

Bone marrow examination revealed 100 per cent lymphoblasts, white blood count was 11,000, red blood count 4,900,000, Hb. 13 gms., 7 per cent eosinophils, differential count showed 15 stabs, 16 segments, 62 per cent lymphocytes and a platelet count of 90,000. Biopsy of the cervical lymph gland revealed replacement with round cells lymphoblastic in appearance. The child was given x-ray therapy over the neck and spleen amounting to 400 r. over a period of ten days.

The size of the lymph glands and spleen diminished and the patient was placed on aminopterin, .5 mg. by mouth per day, on July 17. Blood transfusion was given on July 22. Bone marrow aspiration examination on July 26 revealed 90 per cent blasts. During this hospital stay from July 22 to July 31, the child received penicillin continuously. The patient continued to be observed in the Outpatient Department until October 2 at which time she reentered the hospital with essentially no change in the general picture and with history of little difficulty except for fever and vomiting during the previous week. The child was given by intravenous drip through cut down and intravenous cannula 5 mg. of ACTH and 1,000 cc. of water. At that time the platelet count was 22,000, red blood count was 2,500,000, Hb. 8 gms., white blood count was 5,600, and differential count revealed 93 per cent lymphocytes. On the third day intravenous fluid was reduced to 500 cc. of water per twenty-four hours; vitamin C and K as well as penicillin were administered continuously. Five mg. of ACTH continuously was continued for ten days. On October 15, the patient was asymptomatic, eating exceptionally well and the bone marrow aspiration revealed 69 per cent lymphoblasts and 7 per cent erythroblasts. Aminopterin was readministered, .5 mg. daily, on October 15 at termination of ACTH therapy. On October 26 bone marrow aspiration examination revealed 10 per cent blasts and 14 per cent erythrocytes (see fig. 7). Diagnosis was clinical and hematological remission.

Supportive blood transfusions were given to bring the red blood count and hemoglobin to normal and the patient was discharged on November 3 to the Outpatient Department. The patient was maintained in the Otapatient Department on aminopterin, .5 mg. daily, for the following five months without symptoms of physical findings of active disease and she maintained a satisfactory peripheral blood picture.

The patient was readmitted to the hospital on March 3, 1952, with weakness and lethargy following severe pharyngitis for three days. On this admission the liver was palpable as well as the spleen to about the same extent as on previous examinations. On March 4, the red blood count was 3,500,000, Hb. 11 gms. white blood count 2,700, platelet count 26,000, and the differential white blood picture revealed 83 per cent lymphocytes. Twelve and one half mg. of ACTH was administered intravenously daily at slow drip for ten days. No appreciable change in the peripheral blood occurred but on October 15 the bone marrow revealed 7 per cent erythroblasts and 60 per cent lymphoblasts. Aminopterin was readministered and the bone marrow on March 18 was 10 per cent degenerating lymphoblasts and 30 per cent erythroblasts (see fig. 7). The patient was given supportive blood transfusion and was discharged from the hospital without consequential physical findings or fever and with a peripheral blood picture of red blood count of 4,400,000, Hb. 14 gms., white blood count 1,500, platelet count 98,000, 76 per cent lymphocytes, 16 segments, 4 per cent stabs and 4 per cent esinophils.

Case 3. J. M., 9 year old male, entered St. Mary's Hospital on February 13, 1951, with a history of pain in the right heel which was present for one month and which made walking impossible, associated with fatigue and loss of appetite. There was no illness in the family and no significant illness in his past life.

Physical examination revealed a nontender chain of enlarged lymph nodes in the left posterior cervical region, enlarged lymph glands in the right groin but no other pathologic physical findings. His red cell count was 4,500,000, Hb. 13 gms., white cell count 93,000 with 67 per cent lymphocytes. A bone marrow aspiration was done which revealed uniformly primitive lymphoblasts throughout field examination (see fig. 2). Lymph gland biopsy revealed total round cell replacement of glad structure. Diagnosis of acute leukemia was made and on February 24, ACTH, 25 mg. every six hours intramuscularly, was given for ten days. Fifteen mg. ACTH was given every six hours for one week subsequently and 10 mg. every six hours further subsequently for three days. On March 15 bone marrow aspiration examination revealed reduction of lymphoblasts in evidence of hemopoeitic activity. The child was asymptomatic except for a slight limp. Enlargement of the glands had disappeared from the neck and groin. On March 18, white cell count was 1,600, red cell count 4,000,000, Hb. 12 gms., lymphocytes 70 per cent of peripheral blood smear. Penicillin was administered by mouth during the entire course.

The patient was discharged on March 18. He remained asymptomatic. Bone marrow done on the patient as an outpatient on April 3 showed less than 10 per cent blast forms per field (see fig. 7). Bone marrow picture on July 10, three months after discharge, revealed return of the excessive lymphoblast picture (see fig. 2). Cortisone was administered orally but symptoms of fatigue and loss of appetite increased. On August 27 purpure developed and the child began to bleed from the mouth. The liver became palpable and the spleen was markedly enlarged four fingers below the costal margin. The patient was readmitted to the hospital on August 27 and was given a transfusion and 1 mg. of aminopterin daily by hypodermic. This therapy was continued for ten days, at which time the child began to bleed from the mouth, had multiple sores therein and showed 70 per cent lymphoblasts but they were greatly vacuolated. On September 15 the patient was again given a transfusion. On September 13, the patient was started on 12½ mg. ACTH by slow intravenous drip for twelve hour periods. This was continued for ten days supplemented by vitamins and penicillin and on September 24 a bone marrow aspiration examination revealed 11 per cent blasts and erythropoietic degeneration (see fig. 7). Aminopterin, .5 mg. every other day, was administered to the child as an outpatient. Peripheral blood remained satisfactory and the patient was asymptomatic until November 25 when he

developed fever and a sore throat. On December 4 bone marrow aspiration revealed 84 per cent lymphoblasts. Because of the time of year the patient was given large doses of cortisone continuously as an outpatient in association with aminopterin, .5 mg., aureomycin and potassium and was placed on a strictly salt free diet which maintained a status quo as far as bone marrow examination revealed, but provided considerable alleviation of any sense of illness.

The patient was readmitted to the hospital on January 12, 1952, following rapid development of anemia and purpura the previous forty-eight hours. Blood transfusions were administered. The child succumbed forty-eight hours after admission with a white blood count of 2,000, a platelet count of 14,000, a red blood count of 2,000,000, and Hb. of 6 gms. Diagnosis was acute leukemia.

The noteworthy points in these cases are:

1. The ability of antibiotics judiciously used to maintain the patient infection free.

2. The ability of ACTH, particularly when given by intravenous slow drip method in small doses, to alleviate the symptoms of the patient for relatively long periods of time and for the severe terminal stage to be relatively short in duration.

3. The suggested mechanism of influence of ACTH being a lympholytic and regenerative effect on the bone marrow and possibly a degenerative effect on the nondifferentiating primitive blasts, particularly when aminopterin is used in conjunction with the ACTH.

4. The reduced metabolic disturbances and reduced cost to the patient with the use of intravenous drip method of ACTH therapy.

CONCLUSION

1. The fatal outcome of acute leukemia is not influenced by any form of present therapy.

2. It is possible to produce remissions of the symptoms and organic findings repeatedly in acute leukemia with minimal doses of ACTH therapy over a period of ten days.

3. The use of small doses of aminopterin following ACTH therapy is well tolerated and appears to contribute markedly to maintaining the depressing effect on the primitive cell in the bone marrow in this disease.

4. Cortisone therapy has been insufficiently used to evaluate.

5. The increased well being of the patient with the judicious use of antibiotics, ACTH and aminopterin during the course of acute fatal leukemia justifies the cost and effort of their use.

6. The incidences of acute leukemia in rural areas are sufficiently impressive to suggest further investigation of etiologic implications.

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THE MANAGEMENT OF PATIENTS WITH ABNORMAL CHEST X-RAYS

E. E. GLENN, M.D.
SPRINGFIELD

THE FIRST KNOWLEDGE of many chest lesions is by a chest x-ray made in mass surveys, on admission to a hospital or as a part of various types of examinations. One must first make certain a chest lesion is present and not an artefact on the initial x-ray film. Often the initial film is a photofluorogram and the reader must report all suspicious shadows. Careful investigation of the patient's history is essential in order to properly evaluate factors of inheritance, exposure to infection, industrial hazards, respiratory irritants and environmental factors. Symptoms may be present or may have been present in the past such as cough, expectoration, hemoptysis and chest pain. Symptoms or physical findings of disease of other organs or systems may be of great importance in explaining the chest lesion. Careful chest examination should be made but frequently is negative in lesions found initially by chest x-ray. It is especially important to search for lymphadenopathy as lesions involving the lymph glands frequently are of the same etiology as the lesion in the chest. Laboratory examinations consist chiefly of skin testing, bacteriologic and cellular studies of sputum, bronchial secretions and pleural fluid.

First strength P.P.D. or 1:1000 O.T. intracutaneously are of greatest importance in skin testing. Most people with tuberculosis infection will react to this strength of tuberculin whereas nonspecific reactions may occur to stronger solutions accord-



Fig. 1

From the Glenn-Turner Medical Clinic, Professional Building, Springfield, Missouri.
Read before the 94th Annual Session of the Missouri State Medical Association, March 30-April 2, 1952, St. Louis.

ing to Mantz[1] and others. Histoplasmin and coccoidiodin are also important in skin testing in this region, especially the former.

Several specimens of sputum should be studied for tubercle bacilli and if negative by direct smear, should be cultured on suitable media. Gas-



Fig. 2

tric washings or material obtained by bronchial lavage should be studied in cases in which tuberculosis of the respiratory system is under consideration and no sputum is obtainable. Direct smear of specimen from gastric lavage is always unreliable as acid fast bacilli other than tubercle bacilli are often found in gastric contents. Guinea pig innoculation with sputum, exudate or body fluid being studied, is at times more reliable than cultures. The importance of cellular studies of sputum, bronchial secretions and pleural exudate will vary with the training and experience of the pathologist. At best some false positives are obtained and many negatives in the presence of pulmonary or bronchial lesions later found to be malignant.

Thorough x-ray studies of the chest include much more than a single 14 by 17 film, even though the quality of the film is excellent. If the patient has had previous chest x-rays it is important to obtain them for comparison with the film showing the lesion. Attention is called to the difficulty of correct reading of chest x-rays by radiologists and chest specialists as shown in the study by Yerushalmy et al.[2] This emphasizes the need for the x-ray examination to be as thorough as possible. This study also stresses the need for the general examination and clinical evaluation of all findings to be as well correlated as possible. Direct lateral films, oblique views, lordotic views and apicograms may be of great importance. Body section radiography often gives valuable information. Fluoroscopic examination by one experienced in this procedure may give information in regard to pulmonary, mediastinal and pleural lesions not otherwise obtainable.

Bronchoscopy is necessary in many cases to determine if intrabronchial lesions are present, to obtain a biopsy specimen or to obtain bronchial secretions for further basteriologic and cellular studies. Bronchoscopy is often essential also to determine if bronchial or tracheal involvement will interfere with excisional surgery. Bronchography may give valuable information, especially in regard to bronchiestasis. Its use as a routine procedure is discouraged because opaque oil may be retained and obscure a lesion under observation. However, retention of the opaque oil in the pulmonary parenchyma is an indication of pulmonary emphysema or of bronchial pathology. Biopsy of glands may give valuable information in many cases, among which are cancer, lymphoma, sarcoid, leukemia and tuberculosis.

After thorough study the nature of the lesion shown by the chest x-ray may remain in doubt. If the lesion is characteristic of tuberculosis close observation with frequent chest x-rays may be indicated, especially if the tuberculin reaction is positive. During such periods the patient should be on bed rest or on some degree of reduced activity. Lesions have been seen which were considered typical of tuberculosis infiltration which disappeared within a few days or weeks, proving they were not of a serious character.[3] Serial films



Fig. 3

should be continued in such cases until one can be sure they do not recur.

Disseminated nodular pulmonary lesions are at times found on routine chest x-rays. The persons whose lungs show these lesions may be asymptomatic and many of them show negative

tuberculin reactions. Often these lesions are transient. This type of pulmonary infiltrate has recently been discussed by Chaves and Obeles[4] It was formerly believed by most observers that calcified lesions in the lungs and lymph glands of the chest were of tuberculous origin and that the person having them was rather likely to develop active tuberculosis. However, observations during and since World War II have shown that they are frequently due to other infections, especially histoplasmosis in the Midwest, and that they are not often the source of active tuberculous disease when they are of tuberculous origin. Good, Clagett and Weed have reported rather convincing evidence that granulomas or circumscribed lesions in the lungs which show definite lamination or calcification are not malignant.[5]

Thoracotomy and pulmonary resection have become safe procedures in the hands of a surgeon well trained and experienced in chest surgery. Should the likelihood of the lesion being malignant be great and if the lesion is localized in one lung or in one lobe, thoracotomy should be considered without waiting to observe if the lesions are changing. The possibility of an operable malignant lesion becoming inoperable is considerable. It is therefore urgent that exploratory thoracotomy be done when the possibility of the lesion being malignant cannot be ruled out. This applies particularly to circumscribed lesions. If the lesion is found to be tuberculous when the chest is



Fig 4

opened resection may be the preferred method of treatment.

The majority of the lesions discovered by routine chest x-ray prove to be of no great clinical importance. However, the percentage of cases which are found that would be disastrous to the patient if not treated properly is great enough to make it mandatory that all be studied thoroughly and receive necessary treatment. Only when each case discovered by routine or mass survey chest x-rays is studied thoroughly is the full value of the procedure realized.

The treatment of the chest lesions found by routine chest x-rays is determined by the diag-



Fig. 5

nosis of the chest disease, associated disease and the patient's general condition. Often only frequent observations of the person with the lesion are necessary if the lesion consists of pulmonary infiltrations or pleural changes that have been proven to be stationary or inactive without evidence of malignancy.

If the diagnosis of active tuberculosis is made, the lesion must be evaluated carefully and proper treatment given, which usually is best administered in a sanatorium. Circumscribed lesions are almost always an indication for surgical resection unless small and serial x-rays show they are unchanging, laminated or calcified. Some of these lesions are due to a cavity filled with necrotic material containing tubercle bacilli. Should the bronchus opening into such cavity reopen, ideal conditions exist for an acute tuberculous spread in the lung as was recently shown by Medlar.[5] One must remember constantly that many of these lesions are malignant. In order for all lesions to be treated properly it is necessary to keep abreast of the rapid developments in the diagnosis and treatment of chest disease.

REPORT OF CASES

Case 1. Male, aged 62, had a chest x-ray made in August 1947 by a mobile unit of the Missouri State Health Department. When examined on February 7, 1950, he gave a history of having worked in gold mines in the West from 1907 and intermittantly until the onset of World War I. A chest x-ray showed considerable infiltration in both lungs with nodulation (fig. 1). The patient has been seen every few months since then and the lesions have shown no marked

change. Repeated sputum examinations have been negative for tubercle bacilli. It is now felt that his disease is due to silicotuberculosis with conglomerate nodules in both upper lung fields. Altogether, these



Fig. 6

lesions have been followed for almost five years. He has gradually become more dyspneic and for this reason is totally disabled.

Case 2. Male, aged 66, had routine chest x-ray in June 1951 on personnel at the U. S. Medical Center for Federal Delinquents which disclosed a circumscribed density in the right lower chest (figs. 2 and 3). Previous yearly films, including one made one

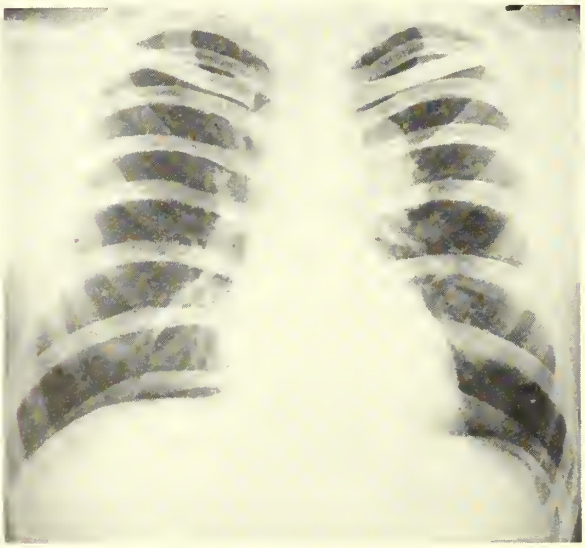


Fig. 7

year previously did not show this density. Patient was moderately emphysematous, was a heavy cigarette smoker and a moderately heavy drinker. Sputum studies were negative for tumor cells and bronchoscopic examination was normal. Thoracotomy was done June 13, 1951. A primary carcinoma was found which crossed the interlobar fissure. There was no involvement of hilar lymph glands. For that reason, a right pneumonectomy was done. The patient has shown no signs of recurrence and is back at work. He complains of shortness of breath on rather slight exertion.

Case 3. Male, aged 69, had known of having high blood pressure for several years, but his health was rather good until January 1 1952, at which time he suddenly developed a left hemiplegia. He began to have dyspnea and orthopnea a week before admission to St. John's Hospital on February 8, 1952. Three days before admission sharp pain in his left chest developed suddenly on deep breathing, accompanied by fever and expectoration of bloody sputum. Examination showed auricular fibrillation with evidence of previous anterolateral myocardial infarction. He was in congestive failure and it was thought that x-ray findings were consistent with clinical diagnosis of pulmonary infarction from an auricular thrombus. Routine examination of sputum showed many acid fast bacilli. This was confirmed by repeated sputum

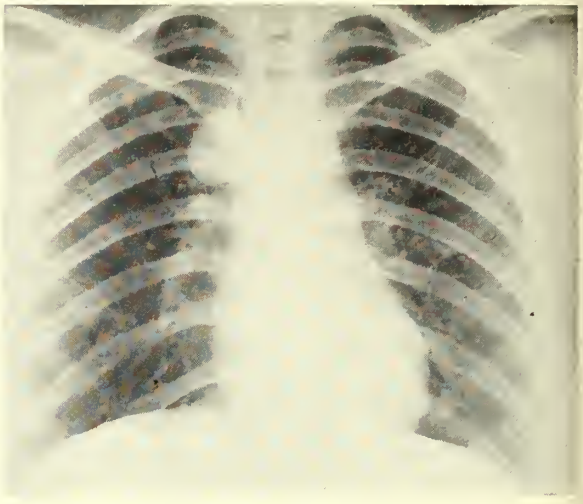


Fig. 8

examinations. This is an example of active open tuberculosis disease of the lungs being overlooked by chest x-ray and found by routine examination of sputum raised by hospital patients.

Case 4. Female, aged 16, on whom a 4 by 5 film was made in a school survey in the fall of 1950 by the Greene County Tuberculosis Unit was advised to have further examination but did not report for complete examination until December 21, 1950. A light to moderately dense infiltration was then present at the level of the second and third anterior interspaces on the right. The infiltration appeared to be rather soft. The patient showed no elevation of temperature, sedimentation rate was normal and blood counts were normal. There was a negative reaction to histoplasmin 1:1000 and P.P.D., first strength. The patient was advised to get as much rest as possible and report for further examination in two months. She was not seen again until June 11, 1951, at which time the infiltration in the lower part of the right upper lobe was found to be more extensive than it was previously (fig. 4). Tuberculin P.P.D., first and second strength, were negative and histo-

plasmin reaction remained negative. Gastric lavage was done and culture showed no tubercle bacilli. At that time, sedimentation rate was increased, being 20 mm. in one hour. She was put on streptomycin, 1 gm. twice weekly, and PAS, 12 gm. daily, for a period of thirty-three days, at which time the infiltration showed some decrease. Films were made at four week intervals which showed no change in the lesion until January 5, 1952. At that time she reported that she had recently had a severe cold with elevation of temperature. The infiltration in the right upper lobe was more extensive. She was then sent to the Missouri State Sanatorium where both histoplasmin and tuberculin reactions have continued to be negative. Several more gastric cultures have been negative and two bronchoscopies have shown no abnormalities. Agglutinations are negative for brucellosis and tularemia. Bronchograms are negative. Biopsy of a gland obtained from the fat filled space over the anterior scalenus showed only a nonspecific inflammatory process. Meanwhile, the patient's general condition has improved and infiltration is again less dense and less extensive.

I feel that the lesions cannot be definitely diag-



Fig. 9

nosed without thoracotomy which is not felt to be indicated as long as improvement continues.

Case 5. Male, aged 65, had a survey chest x-ray film made by a mobile unit of the Missouri State Health Department in the fall of 1949. He was advised to have further examination but did not do so for a year. At the time of examination, November 16, 1950, he reported feeling tired and having frequent colds with cough. A six foot film of the chest showed an area of moderately dense infiltration at the level of the second anterior interspace near the lateral chest wall with a larger area of infiltration at the level of the fourth and fifth anterior interspaces near the right cardiac border. X-ray in the right lateral position showed suggestive evidence of atelectasis of the right middle lobe. Comparison with the original film made April 22, 1949 showed no great change in the extent or density of the lesion in the right upper lobe but the lesion in the right middle lobe was considered to be larger. Sputum was negative for acid fast bacilli. Bronchoscopic examination showed no obstruction of bronchi. Purulent material was seen coming from the middle lobe bronchus and the right upper lobe bronchus. The exudate aspirated from the bronchi showed acid fast bacilli and no tumor cells. The patient was then admitted to the



Fig. 10

Missouri State Sanatorium where he remained several months and was discharged as arrested.

Case 6. Male, aged 15, had a 4 by 5 fluororoentgenogram made at Springfield Senior High School which revealed a density in the right cardiophrenic angle (fig 5). Lateral view showed this density to be located anteriorly (fig. 6). First strength P.P.D. was intended to be put on right forearm and histoplasmin 1:1000 on the left arm. When the patient returned, the right arm showed negative reaction and the left arm 1 plus reaction. Bronchoscopic exami-



Fig. 11

nation showed occlusion of the right middle lobe bronchus. Thoracotomy was done December 15, 1951 and the right middle lobe found grossly to appear tuberculous. It was removed and found to contain

tubercle bacilli. The tuberculin and histoplasmin tests were then repeated and the P.P.D. first strength was found positive and the histoplasmin reaction was negative. It was quite evident that the tests had been mistaken for each other when first given. Since surgery, the patient has been doing well and received streptomycin and PAS for two months.



Fig. 12

Case 7. Male, aged 18, had routine entrance physical examination with chest x-ray at Southwest Missouri State College. The chest x-ray showed a mass with a well defined lateral border extending about 3 cm. out into the left lung field beyond the aortic knob, at the level of the first and second anterior interspaces (fig. 7). The patient was in excellent physical condition. Both strengths of P.P.D. gave negative reaction and there was a negative reaction to histoplasmin 1:1000. Bronchoscopy was negative. Thoracotomy was done December 1, 1951 and the tumor mass was found to be a benign thymoma. The patient recovered nicely and returned to school about five weeks later and has been in good condition since.

Case 8. Female, aged 27, in a routine faculty chest x-ray made April 19, 1947 at Southwest State College showed a density in the right peritracheal region (fig. 8). Right lateral chest x-ray showed the mass to be in close relationship to the trachea (fig. 9). It was thought that granules of calcification could be visualized. Frequent chest x-rays were made until March 29, 1948. They showed the circumscribed density to remain unchanged. The patient was anxious about the lesion and its failure to show more definite evidence of calcification caused me to believe that its removal was indicated. It was removed August 6, 1948 and found to be a granuloma, apparently of tuberculous origin, but tubercle bacilli could not be recovered. The patient has been in excellent health since.

Case 9. Female, aged 52, had a routine chest x-ray at Southwest Missouri State College in July 1950 which showed a circumscribed density in the right cardiophrenic angle which extended 3.5 cm. from the right heart border (fig. 10). This was found to move with the diaphragm, and could not be separated from the diaphragmatic shadow. X-rays of the esophagus and stomach indicated that neither of these structures were related to the circumscribed density. A chest x-ray was obtained that was made in July 1948. It showed the density was present at that time. Thoracotomy was done on August 10, 1951. It was found to be a pericardial cyst. The patient has remained in good health.

Case 10. Female, aged 30, had a chest x-ray made as part of a survey project in St. Louis in November 1950. When examined, December 7, 1950, there was a widening of the mediastinum immediately above the cardiac shadow (fig. 11) and near the anterior chest wall as shown by films made in the left lateral position and in the right anterior oblique positions (fig. 12). Film after barium shadow showed the esophagus to be displaced slightly to the right. The patient had a left thoracotomy in May 1950 and a dermoid cyst about 6 cm. in diameter was found in the anterior mediastinum and extending over to the left. The cyst was removed and a chest x-ray made January 15, 1952 (fig. 13) together with physical and fluoroscopic examination shows no evidence of recurrence.

Case 11. Female, aged 11, had a routine chest x-ray made in the spring of 1950. Examination July 13, 1950, showed a circumscribed density in the right cardiophrenic angle which did not move with the diaphragm and seemed closely related to the vertebral column. Barium swallow showed that it was not related to the esophagus. Thoracotomy was done July 25, 1951, and the mass was found to be a benign



Fig. 13

ganglioneuroma related to the eleventh intercostal nerve near the spine. It was successfully removed. The patient recovered and has remained in good health.

SUMMARY AND CONCLUSIONS

1. First knowledge of many chest lesions is by routine chest x-ray of persons who are asymptomatic.

2. Careful history and physical examination, complete x-ray examination of the chest, laboratory examinations, especially bacteriologic and cellular studies, bronchoscopy and bronchography are often necessary to make a correct diagnosis.

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3. Biopsy of lymph glands may be helpful.

4. Exploratory thoracotomy and pulmonary resection when indicated are now safe procedures in the hands of surgeons well trained and experienced in chest surgery and should be utilized with as little delay as possible in many cases.

5. After the chest condition has been diagnosed, treatment will depend on the nature of the lesion.

Professional Building.

All surgery in these cases was done by Dr. Robert D. Duncan and bronchoscopy by Dr. Robert D. Duncan and Dr. John Westerfield Williams.

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BOOK REVIEWS

Cerebral Palsy, by John F. Pohl, M.D., Orthopedic Surgeon, Michael Dowling School for Crippled Children, Minneapolis, Minnesota. Bruce Publishing Company, Saint Paul, Minnesota. 1950. Price $5.00.

The field of Cerebral Palsy is too new for definitive or authoritative texts to be available at this time. Dr. Pohl's book represents the experiences and opinions of himself and certain staff members of the facility with which he has been associated and therefore one segment of the many approaches found today in this new and rapidly developing field. It is not therefore a comprehensive textbook but is of definite value to all professional personnel who may be involved in the treatment of this condition. The book represents experiences gained in working with 144 children from whom the pertinent data presented were obtained, and less specifically from 512 cases in whom the author supervised treatment in some degree. It briefly outlines the general medical aspects of the problem, then sets forth a routine of treatment primarily used at the Dowling School. Physical therapy is stressed, and there are less effective presentations of speech and occupational therapy. Specific attention is given to the use of muscle relaxation and the training in voluntary control of an individual muscle basis, similar to the concepts used in treatment of poliomyelitis. Some authorities question the feasibility of this method in cerebral palsy due to the fact that a different basis is present for the primary inability in muscular control.

Where most programs have found it necessary to utilize bracing and functional equipment to a moderate degree, even in milder cases, these phases receive little attention in this book. It is my opinion that lack of such apparatus will eliminate effective treatment for a large segment of these children who can be effectively helped. To approach the problem in this manner is conducive to a continuance of the basic factor responsible for the neglect of the problem in general. That is, that in the past the tendency has been not to try to help any but the mild, hopeful appearing cases.

Some of the principles set forth in diagnosis and treatment are at variance with other well known programs in the country. Such a difference of opinion makes for a healthy development of facilities in the future, if not carried too far afield. Such controversial presentation must be considered, however, for what it is, one approach and one segment of opinion, not a universally accepted fund of information.

The reader must bear in mind that any succesful program for cerebral palsy will include ways and means to do justice to all the cases that may come for help. Criteria for diagnosis, classification, prognosis and treatment must therefore be generally applicable and dependable. Data concerning etiology must be workable and usable in programs of research and prevention on a universal basis. Several of the factors set forth in this book are at variance with my experience in a greater number of cases and must, therefore, in my opinion, be accepted with reservations.

With the knowledge of the magnitude of the Cerebral Palsy problem, and the great need for more education of everyone as to the significant details of its proper handling, the publication of Dr. Pohl's book is welcomed. With the possible shortcomings it has, it has much merit, and it will add greatly to the development of better facilities in this field of endeavor.

R. E. B.

Cancer as I See It, by Henry W. Abelmann, M.D., Philosophical Library, New York. 1951. Price $2.75.

According to the last issue of the AMA Directory the author of this monograph was graduated from Rush Medical College in 1904, having been born in 1880. The title—"Cancer as I See It"—has been criticized by Abe Martin when he said—"That Ain't the Way I Seed It." Of course these hundred pages carry the personal opinion of the author upon Cancer and in an earnest manner but without benefit of reference to other than the few sporadic scientists who support the author in his contention that there are infectious and fungous origins in the development of a cancerous growth. The author makes reiterating allegiance to his plea that the cancer cell is pleomorphous and that this factor has delayed the progress of cancer research. The author pleads that the President of the United States proclaim a Cancer Day each year. But the American Cancer Society beat the gun by forcing observation of a whole Cancer month (April).

At another point the author insists that his research findings point to the germ-virus nature of cancer. Here again the contemporary leaders of cancer research, propaganda and whoop-la funding have beaten this author to the gun by establishing a Committee upon Growth. Now that is all inclusive of every one of the author's conjectural, plemorphic concatenations. At the last pages the author makes adequate apology for writing the book and at long last hits at a central truth factor when he says that the only means today for combating cancer are education of the public, undergoing periodic examinations in the hope that cancer may be detected and treated early. "Seems to me that I heered that before and often," says Abe Martin.

E. H. S.



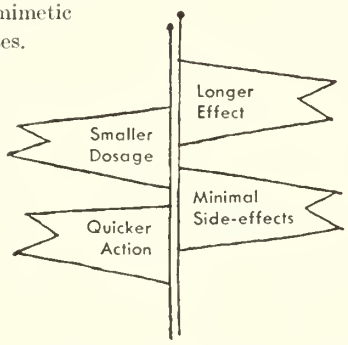
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Postgraduate Review

PRESENT DAY TREATMENT OF ACUTE RHEUMATIC FEVER

MAX S. FRANKLIN, M.D.
ST. LOUIS

THE TREATMENT of acute rheumatic fever has changed a great deal since 1943 when Coburn[1] emphasized the use of large doses of salicylates. However, there is still no truly specific means of conquering the infection even though great encouragement was obtained when Hench[2] brought out the use of ACTH and cortisone.

The first part of the treatment for acute rheumatic fever is bed rest, preferably in the hospital. There should be no argument on this aspect of the treatment. The bed rest and stay in the hospital should be maintained until all clinical signs and symptoms show the complete absence of active rheumatic involvement. Sedation may be necessary if only to help keep the patient in bed and at rest.

The diet is important not only in the treatment of the active infection but also in prevention of recurrences.[3] The diet must be high caloric and complete in regard to fats, proteins and carbohydrates. Jackson[3] found that the diet essentials most commonly deficient in cases which had recurrences were proteins, vitamin D, thiamin and minerals. If patients cannot eat much at one time, small frequent feedings may be tried.

Massell[4] recently described the treatment of seven cases of acute rheumatic fever with large doses of ascorbic acid, giving 4 grams daily in doses of 1 gram four times a day, and obtained quick and excellent results in each case. It is too early to state just how valuable ascorbic acid in large doses may become in the treatment of acute rheumatic fever but this work by Massell and his coworkers seems promising.

In cases of cardiac insufficiency the diet should be restricted in regard to salt and this also may be necessary if the newer hormones are used.

Salicylates still remain the drug of choice[6] since hormone therapy is still in the experimental stage. Salicylate therapy is a time honored remedy in the treatment of rheumatic fever, especially in giving symptomatic relief such as relieving pain, reducing fever and tachycardia and joint manifestations. In 1943, Coburn[1] felt that although definite relief could be obtained with salicylates, the dose was too small and that with more adequate doses given intravenously, the duration of the rheumatic fever process could be shortened and thereby possibly prevent cardiac damage. He claimed that the optimum dose was that which would produce a blood concentration above 35 mgs. per 100 cc. However, his work has not been confirmed by all workers.[7] Others [5] have shown that the oral route is as effective as the intravenous one. To give the massive doses prescribed by Coburn, in children 1½ grains per pound should be given every 24 hours in divided doses and from 8 to 10 grams for adults. Massell[6] prescribed somewhat smaller doses so that children get 1/2 to 3/4 grains per pound body weight and adults 5 to 8 grams total per day. He prefers to use aspirin instead of sodium salicylate. If the patient is vomiting, the drug may be given in starch solution by rectum.

Salicylates may have toxic effects which can be avoided in part by use of enteric coated tablets and by the simultaneous use of sodium bicarbonate to avoid nausea and vomiting. However, it must be remembered that sodium bicarbonate lowers the serum level of salicylates.[8] Tinnitus and deafness usually may be relieved by reducing the dose. Salicylates may also cause reduction of plasma prothrombin[9] so that vitamin K may be necessary.[10] The usual dose is 1 milligram to 1 gram of aspirin. Hyperventilation is a serious sign of salicylate intoxication and the drug must be stopped immediately. This is distinguished from cardiac dyspnea by lack of cyanosis and by the patient's ability to lie flat. Usually discontinuation of the drug for a time and forcing fluids, especially sweet drinks,[6] will be sufficient to overcome salicylate toxicity.

Salicylate therapy should be continued in the treatment of acute rheumatic fever until the sedimentation rate is normal for from two to four weeks. On withdrawal, the patient should be kept in bed for another two to four weeks before one may be sure that all manifestations have completely disappeared. Further convalescence consists of gradual return to normal environment and activities.

In 1949 Hench[2] opened an entirely new era in the treatment of rheumatic fever by introducing ACTH and cortisone. There is still a great deal of controversy as to their effect with many enthusiastic reports and some rather discouraging ones. Massell[11] found that ACTH often causes marked suppression of rheumatic activity and even shortens the course of the disease in some cases. As with rheumatoid arthritis, polyarthritis of rheumatic fever quickly comes under control. Fever and pericarditis also seem to disappear readily under ACTH therapy. Improvement in appetite and gain in weight was noticeable. Subcutaneous nodules were rather more resistant. As Bell[12] and Barnes[13] found, these cases had recurrences when the drug was withdrawn. Irons[14] quotes reports of patients dying of rheu-

Presented before the Buchanan County Medical Society, St. Joseph, February 6, 1952, as a part of the Cardiovascular Program of the St. Louis University School of Medicine in cooperation with the U. S. Public Health Service, the Missouri Division of Health and the Missouri State Medical Association.

matic pancarditis even while on ACTH therapy. On the other hand, Moore[15] states that ACTH or cortisone may have a dramatic effect and may be life saving in cases of fulminating pancarditis. Like salicylates, hormone therapy appears to be more effective when begun early in the course of the disease. As experience grows with the use of the new hormones it is being learned that one must continue the drugs for a long time as with salicylates until one is sure that all clinical manifestations have completely disappeared. The dosage is variable[15] using from 40 to 60 mg. of ACTH to a maximum of several times this amount at first and then cutting the dose down to a maintenance dose, even switching to oral doses of cortisone if desired. Treatment may be started with cortisone, giving from 100 to 300 mgs. the first two days according to the size of the patient, and then cutting down slowly to a maintenance dose.

Toxic effects must be watched for. Hirsutism, acne, abnormal fat deposition, hypertension and hyperglycemia may occur and may require reduction of the dose or even withdrawal of the drug. If psychic disturbances occur, the hormones must be discontinued. The hormones may cause salt retention with accumulation of fluids leading to aggravation of congestive failure. On the other hand, suppression of the acute rheumatic inflammatory process may lead to improvement in the myocardium. The net result depends on which of these two factors is the more pronounced and the more immediate and dominant.[11] So far it is still too early to state just how much ACTH and cortisone will be used in the future. Their expense is a great handicap in regard to extensive use in the average patient at present.

Other treatments for rheumatic fever may be mentioned. Brewer[16] used progesterone and estradiol and obtained good results in 57 per cent of ninety-seven cases. Schaefer[17] and his associates have been working with the biological oxidation product of salicylate, called sodium gentisate. They found this drug to have the same effect on rheumatic fever as salicylates but without any toxic reactions occurring. They used a dosage of 2 grams every three hours until at least ten days after the temperature became normal.

Further treatment in the attack of rheumatic fever may be necessary. Anemia must be corrected by iron and sometimes by small and frequent blood transfusions. The indication for digitalis remains as always, that of cardiac insufficiency. Oxygen also may be useful in cardiac insufficiency and rheumatic pneumonitis. Diuretics may be indicated in salt retention due to hormone therapy and in cardiac insufficiency. Pericardial paracentesis may in a few cases become mandatory but should be done with extreme caution. Fortunately it is usually not necessary to resort to paracentesis.

A discussion of treatment of acute rheumatic fever is not complete without describing the prophylaxis against recurring attacks. Diet has already been mentioned in regard to certain deficiencies predisposing to recurrences of rheumatic fever.[3] It is common knowledge that a poor social and economic status is associated with increased incidence of rheumatic fever.[3, 18] Climate, too, is apparently of great influence, much more rheumatic fever being found in New England than in the South.[18] More specific prophylaxis can be obtained by trying to prevent recurrences by prevention of hemolytic streptococcal respiratory infections. Prevention has been attempted chiefly by prophylactic use of sulfadiazine[19] in doses of 1 gram daily or with oral penicillin in doses of 100,000 units three times a day.[20] If the hemolytic streptococcic infection should occur, it should be treated actively with penicillin for at least ten days.[20]

Prophylaxis against subacute bacterial endocarditis is extremely important in all cases that have had rheumatic fever. This is best accomplished by giving penicillin before and after any operative procedure, including dental extractions and childbirth.

To conclude, although the treatment of acute rheumatic fever has had many advances, the drug of choice is still salicylate.[6] Hormone therapy is still in the experimental stage but shows great promise. Much work must still be done before a more definitive treatment is obtained.

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BOOK REVIEW

DIABETES GUIDE BOOK FOR THE PHYSICIAN by the Committee on Education of the American Diabetes Association. 1950.

This seventy-nine page paper bound book is best described by quoting passages from its foreword: ". . . prepare an outline concerning the diagnosis and treatment of diabetes to serve as a guide for physicians . . . to guide in dealing with the common problems of diabetes . . . to give the best judgment of the Committee concerning acceptable procedures."

In achieving these purposes, this book has done admirable well. It is simply written, avoiding controversial material. It is not intended to present the more complex clinical material or pertinent basic science data.

Diets and diet calculations are discussed and listed for the various problems which may arise. Thirteen pages are devoted to basic commonly accepted practical methods of treatment and control of complications.

This book is to be recommended to any student, house officer or physician having contact with diabetic patients.

S. L. G.



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Vahlquist, B. and Hackzell, G.: Acta Paediatrica *38*: 622 (1949).

NO. OF CASES	SEX	AGE AT ONSET	CYCLIC VOMITING	DURATION OF ATTACK	INTENSITY
31	8 ♀ 23 ♂	3 yrs. (mean)	3 out of 31	2½ hrs.	severe in all cases

TABLE CONT'D

NO. OF CASES	UNILATERAL HEADACHE	NAUSEA	FLIMMER SCOTOMA	VERTIGO	HEREDITY
31	18 out of 31	31 out of 31	12 out of 31	6 out of 31	20 out of 31

(reference given above)

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*Katz, J., Friedman, A.P., and Gisolfi, A.: New York State J. Med. *50*: 2269 (Oct.) 1950.

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Case Report

HERNIA OF THE APPENDIX INTO THE SECOND SACRAL FORAMEN

WILLIAM H. JOLLY, M.D.
ST. LOUIS

AND

BENJAMIN N. JOLLY, M.D.
ST. LOUIS

THIS IS A REPORT of a case of herniation of the appendix into a sacral foramen. On an examination of the literature on rare and unusual hernias no report of this type was found. This case is especially unique in that there was also an endometriosis of the appendix. A herniation was not suspected in this patient preoperatively and the patient's symptom of pain in the right hip was explained on an initial diagnosis as endometriosis of the right adenexa causing some pressure on the pelvic plexus of nerves.

The diagnosis of this condition in lieu any additional pathologic condition of the hernia contents is improbable preoperatively and the frequency of its occurrence must be assumed to be extremely rare by virtue of its absence in reports of large numbers of herniae. The importance of this report is solely on the realization that such a situation can exist.

Had this patient not had an endometriosis of the appendix, the hernia must be assumed to have been asymptomatic as pain was only present associated with menstruation. A similar pain complex could be expected had the patient had an inflammation of the hernia contents.

REPORT OF CASE

E. B., a 35 year old white woman, entered Missouri Baptist Hospital on March 16, 1952, with the following history:

Approximately one year previously the patient noticed a pain in her right hip. She went to a chiropractor who told her that "her pelvis was uneven" and put a "lift" in her shoe to "even her up." The pain in her hip subsided and she quit wearing the "lift." On the day before her next menstruation the pain in her hip recurred and continued through the first two days of her menses and then subsided spontaneously. This pattern of events occurred with each menstruation regardless of whether she wore her shoe with the "lift" or not and each month it became progressively more severe. Six weeks prior to hospital admission the patient consulted an M.D. Examination at that time was normal except for slight resistance in the right side of the pelvis on rectal examination.

Marital History.—The patient has been married for fifteen years. Throughout her marriage they have tried unsuccessfully to have children and so adopted a child in February 1952. Neither the patient nor her husband have been examined relative to their sterility.

Menstrual History.—The patient first menstruated at the age of 14. Menses occurred every twenty days lasting for six days. She has had no dysmenorrhea or metorrhagia. The last normal menstrual period was March 3, 1952.

Examination at the time of admission was essentially normal except for some resistance in the right side of the pelvis on rectal examination.

The diagnosis of endometriosis of the right ovary was made and the patient subjected to operation. At operation the ovaries, uterus and fallopian tubes were examined and found to be normal. Further examination revealed the end of the appendix to be herniated into the right sacral foramen. The appendix was enlarged in its diameter but not inflamed.

The appendix was dissected free from the sacral foramen and the defect closed by suturing together a portion of the tendenous margins of the pyriformis muscle. The appendix was then removed.

The patient had an uneventful recovery and was discharged from the hospital on the fifth postoperative day.

Surgical Pathologic Report.—The appendix measured 6 cm. in length and up to 1.5 cm. in diameter. The midportion was enlarged and measured 0.2 cm. greater than the remainder of the appendix. On section, the wall is composed of a soft gray tissue. The lumen is practically occluded. The lumen contains a yellow fecal material.

Microscopic examination of the appendix reveals the mucosa to be intact. The wall is only slightly congested and contains scattered lymphocytes and plasma cells. At some points within the wall tissue there are areas of round, tubular, glands lined by pseudostratified columnar epithelium. The glands are surrounded by a dense cellular stroma and in some instances red blood cells are apparent within the glandular spaces.

Diagnosis.—Endometriosis of appendix.

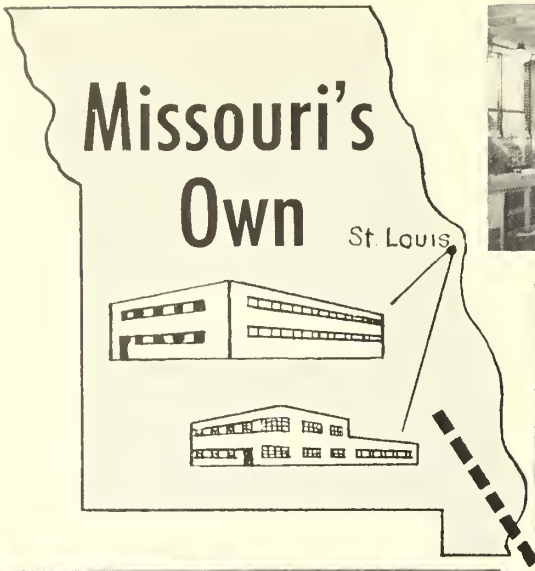
SUMMARY

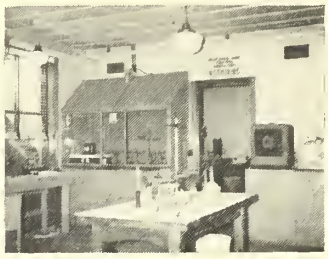
A case of herniation of the appendix into the right second sacral foramen is presented. Endometriosis of the hernia contents was the causative agent of the patient symptoms and was the specific factor for operating on the patient. This patient has been completely asymptomatic since operation.

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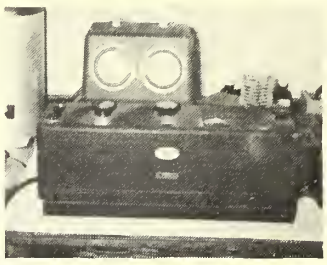
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Special Articles

HOSPITALS AND THE PRACTICE OF MEDICINE

F. C. COLEMAN, M.D.
DES MOINES, IOWA

A SURVEY OF hospital activities reveals that hospitals are no longer just workshops for doctors. Hospitals now provide diagnostic facilities through their radiology and pathology departments and therapeutic facilities through their physical therapy, anesthesia and radioactive isotope departments. Their dietary departments provide instruction and supervision for dietary problem cases. Their pharmacies are big businesses. These diagnostic and therapeutic facilities are frequently the best and, in many instances, the only such facilities in the community. Utilization of them has increased tremendously in the last ten years, with a corresponding increase in income.

The attitude of both doctors and patients toward hospitalization has changed too. Practically all seriously ill patients now go to hospitals so one automatically asks, "What hospital is he in?" when informed of a friend's illness. The once dominant role of the attending physician is being slowly submerged under an array of residents, interns, laboratory technicians, nurses and nurses aids. In fact, a story is making the rounds about a doctor who forgot one of his patients after seeing him on admission to the hospital. The patient, after three more weeks in the hospital, made an uneventful recovery and had returned to work before his doctor thought of him again. Last October, one of the speakers at the American Hospital Association meeting in St. Louis talked on this same subject. He described the modern hospital as a "complex organization utilizing combinations of intricate, specialized scientific equipment, and functioning through a corps of trained technicians educated to the problems of modern science. These are welded together in the common purpose of restoration and maintenance of good health." It is easily understood, therefore, how some people visualize the hospital as the health center of the community.

But hospitals are having their financial problems. Operating costs have increased approximately 265 per cent and building costs have risen even more. Because of high taxation and inflation, donations and endowment returns are shrinking almost to the vanishing point. In 1950, one half of the nonprofit hospitals in the United States were reported to be losing money. What can be done to correct this situation? There are only two possibilities; increase income or decrease expenses. One method of increasing income developed from the idea that "doctors make money in hospitals, why should not they help." An article in *Medical Economics* of September, 1950 described several examples of how the doctors helped. Here is one. A small insolvent Southeastern Hospital required modernization and rejuvenation of its building and equipment to insure efficient operation and an income commensurate to expenses. The staff voluntarily offered to aid by donating to the hospital a 10 per cent commission for collecting their professional fees for services rendered on hospital patients with the understanding that the accrued commission proceeds were to be applied for plant modernization. At the end of the year, the staff found their money had been used instead for operating expenses and the plant was still antiquated and inefficient. When the staff protested, they were amazed to find that the hospital raised the commission to 20 per cent with the ultimatum, pay up or get off the staff.

Other hospitals built doctors' offices near hospitals encouraging the doctors to use the hospital laboratory and x-ray departments.

Another idea was to place specialists such as pediatricians, obstetricians and surgeons on the hospital payroll at a salary and charge the patient private fees for their services. Did you ever stop to think how many surgeons it would require on a full time basis to perform all the surgery in your hospital? This was old stuff to pathologists, anesthesiologists and radiologists, but to physicians in clinical specialties, it was a new and revolting development. Encroachment by hospitals into the practice of medicine has been the subject of much discussion by the House of Delegates and the Board of Trustees of the American Medical Association for many years. The majority of the earlier resolutions and protests came from members of the specialties of radiology, anesthesiology or pathology. As a result of these discussions, the House of Delegates finally recognized the Practice of Pathology as the Practice of Medicine in 1943. Then, in 1947 the House of Delegates adopted the following resolution:

Resolved, That the House of Delegates of the American Medical Association is in complete agreement with the recommendations of the West Virginia State Medical Association in its opposition to the encroachment by hospitals and other organizations on the private practice of medicine; and be it further

Resolved, That all fees for medical services be set by and collected by or for doctors of medicine rendering this service, and that all policies and practices involving medical services be approved by the medical board or medical staff before being put into effect; and be it further

Resolved, That the Council on Medical Education

Director, Department of Pathology, Mercy Hospital, Des Moines, Iowa.

Presented at the joint meeting of the South Central Region College of American Pathologists, St. Louis Pathological Society and the Missouri Society of Pathologists, March 29, 1952, St. Louis.

and Hospitals recommend strongly that all hospitals conform to these resolutions; and be it further

Resolved, That the House of Delegates of the American Medical Association go on record as strongly disapproving this practice of encroachment and that notice of this action be sent to the American, Protestant and Catholic Hospital Associations and to Blue Cross organizations.

Copies of this resolution were sent to the hospital associations, superintendents of all approved hospitals and the secretaries of county medical societies.

Then, in November 1947, the Executive Committee of the Board of Trustees of the American Medical Association requested the Secretary of the Council on Medical Education and Hospitals to prepare a memorandum concerning principles of relationship between hospitals, radiologists, anesthesiologists and pathologists.

The Council then asked the Board of Trustees whether the recently adopted resolution was in conflict with previous actions of the House of Delegates and whether it, the Council, should ever attempt to deal with the economic problems and policies of medical practice or hospital operation. At this same meeting in November 1947, the Board of Trustees appointed a "Committee for the Clarification of the Resolutions on Hospital Competition with Private Practice." This committee with Dr. Louis Bauer as Chairman, submitted a report in January 1948 which: (1) stated that the problem had not been solved; (2) insisted that the specialties of radiology, pathology and anesthesiology and physical medicine be recognized as the practice of medicine; (3) stated that all specialists in the hospitals should be under the jurisdiction of the medical board; (4) stated that specialists should be on the staff of the hospital and be represented on the medical board; and, (5) recommended a committee to review all previous resolutions and meet with hospital associations and specialist societies to work out a solution for this vexing problem.

In February 1948, the Board of Trustees appointed a committee with Dr. Elmer Hess of Erie, Pennsylvania, as Chairman. It became known as the Committee on Hospitals and the Practice of Medicine. The report of this committee, known as the Hess Report, was presented in June 1948. The Hess Report pointed out that: (1) The American Medical Association has no police powers; (2) most of the resolutions on the practice of medicine by hospitals were introduced by radiologists, pathologists and anesthesiologists; (3) a comprehensive report on this subject was prepared in 1942; (4) a study of this and subsequent reports indicates that positive action must be taken by the American Medical Association against those institutions not operating under the broad general principles of ethics of the American Medical Association and that physicians could be disciplined for unethical conduct; (5) recognized the complexity of the problem and asked more time for study; and, (6) warned of the importance of the problem to Blue Cross and Blue Shield.

The Committee then made two specific recommendations: (1) That a study of State laws as they define the corporate practice of medicine be made; and, (2) that the Board of Trustees call to the attention of hospital associations, hospitals and medical schools the principles and policies of the American Medical Association concerning the practice of medicine by institutions, and ask for their cooperation in solving this problem so as not to interfere with the preservation of the private practice of medicine.

In December 1948, this Committee on Hospitals and the Practice of Medicine, with Dr. Hess as Chairman, submitted a progress report which: (1) Recognized the criticism often leveled against the American Medical Association for failure to take action against institutions; and, (2) warned that every physician must know what the duties and obligations of the American Medical Association are in order to legally exist, as well as how the American Medical Association is organized. Some of these points are: (a) that the American Medical Association is a federacy of constituent state medical associations, which are in turn a federacy of their local county or component societies; (b) the objects of the American Medical Association are to promote the Science and Art of Medicine and the betterment of public health; (c) the Judicial Council has authority in all matters of ethics, but that complaints on unethical conduct or other controversies must come up through channels—first at the local level, then the state level and, finally, the Judicial Council, which acts as a sort of Supreme Court; (d) thus, the machinery is set up but seldom used for the settlement of those problems that cause complaints by physicians; (e) warned that according to the Constitution of the American Medical Association, decisions on ethics must be based on the ultimate effect for good or ill on the people as a whole; (f) called attention to the fact that when hospitals or medical schools are practicing medicine, some physician is guilty of unethical conduct.

At this same meeting the Board of Trustees presented a supplementary report which pointed out that, although the American Medical Association has no police power, it must establish policies for the guidance of component societies. Early in 1949 the Bureau of Legal Medicine made its report on the corporate practice of medicine in the various states. The conclusion drawn from the study was as follows: "The majority of court decisions concerning the corporate practice of medicine, support the general rule that a corporation may not practice such profession directly or indirectly through the employment of licensed personnel, because medical practice acts seem definitely to preclude the licensing of any other than a natural person to practice medicine." Since

divergent opinions were expressed in various states, however, I will cite two examples: The Attorney General of California handed down an opinion on this subject that reads as follows: "The employment of a licensed physician by a corporation and the subsequent billing of the patients by the corporation would constitute illegal practice of a system or mode of treating the sick or afflicted in this state and is, therefore, prohibited by law."

The Attorney General of Texas, on the other hand, has ruled: "We find nothing in the Medical Practice Act which prevents a hospital from hiring one or more physicians to perform professional services for its patients."

In June 1949, the Hess Committee submitted another report which was approved by the House of Delegates. This report pointed out that: (1) corporate practice of medicine is illegal in most States; (2) reviewed the principles of medical ethics in detail with emphasis on settling of disputes at local levels through the formation of committees on hospital and professional relations in each state society; (3) pointed out that it is unethical for any lay corporation to practice medicine and to furnish medical services for a professional fee which shall be so divided as to produce profit for a lay employee; (4) if a hospital or lay group is found guilty and will not cooperate within ethical and legal limits, the Judicial Council shall withdraw the American Medical Association's approval of that institution as authorized by the By-laws of the American Medical Association; (5) recommended that hospital service plans cover only hospital services; and, (6) recommended the principles enunciated in the McKittrick Report to the Massachusetts Medical Society which advocates the separation of medical and nonmedical costs in hospital care and stated that each department in a hospital should be selfsupporting.

In December 1949, the Board of Trustees asked the House of Delegates to reconsider the report because legal counsel had advised that it could be seized upon by a person or party in argument to court or jury that the American Medical Association is restraining, coercing or conspiring against hospitals or institutions and not, in reality, enforcing medical ethics.

The Hess Committee, now officially known as The Correlating Committee on Extension of Hospitals and other Facilities of the Council on Medical Service, again reviewed the problem and in June 1950 submitted a revised report which differed from the previous one only in that: (1) a close liaison with local and state hospital groups was recommended; (2) the section objected to by legal counsel was revised to read: "If and when a physician is found to be unethical by the proper authorities as established through constitutional channels and he is still retained on the staff of any hospital approved for resident or intern training, it shall be the duty of the Judicial Council to request the Council on Medical Education and Hospitals to show cause as to why that Council should not remove such hospital from the approved list under the assumption that the hospital is just as unfit for the training of young physicians for unethical reasons as it is unfit because it may not or does not have proper filing systems for its laboratory or clinical records."

Then, in December 1950, this section of the report was modified again at the suggestion of the Judicial Council to read: "It shall be the duty of the Judicial Council to request conference with the Council on Medical Education and Hospitals on the advisability of removing such hospitals from the approved list."

Then, in December 1951, on recommendation of the Board of Trustees, all reference to removal of hospitals from the approved list was deleted and the report was given a new name—it is now called "Guides for Conduct of Physicians in Relationships with Institutions." Principles enunciated in these guides are: 1. A physician should not dispose of his professional attainments or services to any hospital, corporation or lay body by whatever name called or however organized under terms or conditions which permit the sale of the services of that physician by such agency for a fee.

2. Where a hospital is not selling the services of a physician, the financial arrangement if any between the hospital and the physician properly may be placed on any mutually satisfactory basis. This refers to the remuneration of a physician for teaching or research or charitable services or the like. Corporations or other lay bodies properly may provide such services and employ or otherwise engage doctors for those purposes.

3. The practice of anesthesiology, pathology, physical medicine and radiology are an integral part of the practice of medicine in the same category as the practice of surgery, internal medicine or any other designated field of medicine.

Copies of these guides are available in pamphlet form from the American Medical Association. This great fear of legal action stems from a law suit against the American Medical Association when in 1937 one Harry Becker organized a number of federal employees into a group known as The Cooperative Medical Group of Washington. Doctors taking care of these people were refused membership in their local and state medical societies, as well as the American Medical Association, because of unethical practice. Action against the American Medical Association was instituted under the Sherman Antitrust Act and the American Medical Association lost the suit. It is also of more than passing interest to note that Harry Becker is now educational director of the United Automobile Workers Union and is also, while on a leave of absence, serving

as associate director of the newly founded Commission on Financing of Hospital Care.

An analysis of the situation, therefore, reveals there is still the same problem and still no solution. There are some things, however, that are manifest: (1) Doctors and hospitals are engaged in a controversy over control of the private practice of medicine; (2) hospital encroachment of medical practice is not just a problem for radiologists, anesthesiologists and pathologists; (3) solution of this problem can come only through prudent but effective action by organized medicine; (4) specific cases can be resolved at a local level but the general problem has to be solved at a national level; and, (5) a new acceptable method for enforcing the principles of medical ethics on both physicians and institutions must be found.

So all should support the College of American Pathologists and the American Medical Association in every way possible as they wrestle with the problem.

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THE CARE OF HAND INJURIES

I. PROTECTION OF THE HAND

The first aid care of wounds of the hand is directed fundamentally at protection. It should provide protection from infection, from added injury and from future disability and deformity. The best first aid management consists in the application of a sterile protective dressing, a firm compression bandage and immobilization by splinting in the position of function (wrist hyperextended in cock-up position, fingers in midflexion and separated, thumb abducted, slightly forward from hand and slightly flexed.) No attempt should be made to examine, cleanse or treat the wound until operating room facilities are available.

Prepared by the American Society for Surgery of the Hand and distributed by the Committee on Trauma, American College of Surgeons, through the Missouri Regional Committee on Trauma of the American College of Surgeons.

II. REQUIREMENTS OF EARLY DEFINITIVE TREATMENT

Early definitive care requires thorough evaluation of the injury with respect to its cause, time of occurrence, status as regards infection, nature of first aid treatment and appraisal of structural damage. For undertaking definitive treatment, the conditions required are a well equipped operating room, good lighting, adequate instruments, sufficient assistance, complete anesthesia and a bloodless field. Treatment itself consists of aseptic cleansing of the wound, removal of devitalized tissue and foreign material (exercising strict conservation of all viable tissue), complete hemostasis, the repair of injured structures, protecting nerves, bones and tendons and providing maximum skin coverage and the application of firm protective dressing to maintain the optimum position. After-treatment consists of protection, rest and elevation during healing, and early restoration of function by directed active motion.

III. SURFACE INJURIES

Burns, abrasions and avulsions may cause destruction and denudation of any area of the skin of the hand. The care of such injuries has three major objectives: (1) protection from infection, (2) early restoration of skin covering, and (3) avoidance of disabling scarring and contractures. These objectives are sought in the various stages of treatment.

1. *First aid treatment.*—(a) Chemical burns, remove chemical by profuse irrigation with water, preferably warm; (b) heat burns, abrasions and chemical burns (after washing away the injuring agent) apply sterile dressing to cover the hand completely and bandage firmly.

2. *Definitive treatment.*—This should be carried on in the operating room under conditions of strict asepsis (draping of field, sterile gloves, masking of operator and attendants): (a) gentle removal of first aid dressing, soaking loose with normal saline solution if necessary; (b) gentle cleansing of injured surface by light sponging with saline on cotton balls. If surface is dirty or greasy, it may be cleansed gently with sterile neutral soap in sterile water or bland detergent. Loose fragments and tags of skin are removed. Blisters are not opened. (c) sterile strips of fine mesh vaseline impregnated gauze are smoothly applied to the injured surface. These are covered with dry sterile gauze, gauze being placed between adjacent fingers. The whole hand is covered with a thick layer of sterile mechanic's waste or fluff gauze and splinted in the position of function. Elastic knit bandage is applied over all, including all fingers, with firm even pressure. The hand is kept elevated.

3. *Subsequent dressings.*—The original dress-

ing is left undisturbed for from twelve to fourteen days unless elevation of temperature suggests active infection requiring inspection. The second, and all subsequent dressings until healing, are done under completely aseptic conditions. Preparations for skin grafting should be made in advance. (a) The dressing is removed, slough and debris are washed away by irrigation with normal saline solution (no scrubbing of surface); (b) granulating areas from which slough has separated should be covered with thin split thickness skin grafts; (c) dressing, similar to that employed at first definitive treatment, is applied, hand is splinted in position of function; (d) further dressings, similarly conducted, are done at intervals of seven days until epithelization of burned surface is complete. Skin coverage by grafting should be secured as rapidly as possible as the best assurance against infection, inflammation, infiltration, scarring and contractures. This early coverage by "skin dressing" is of the greatest importance, even when epithelization from the margins is proceeding satisfactorily. Split thickness grafts are best for this purpose, even though it is anticipated that some of the grafted area must later be removed for replacement by more suitable skin.

4. *Restoration of function.*—As soon as epithelization of burned surfaces is complete, directed active use and exercise of the hand is begun. Normal use of the hand is encouraged and voluntary exercise and appropriate occupational therapy prescribed.

IV. LACERATED WOUNDS

Lacerations may damage skin, fat, fascia, muscles, tendons, tendon sheaths, blood vessels, nerves and, more rarely, joint or bone. The treatment of such injuries has four objectives: (1) protection from infection, (2) restoration of structures, (3) avoidance of deformity, and (4) early restoration of function. These objectives are furthered by proper first aid care, as outlined in I ("Protection of the Hand") and by definitive treatment.

1. *Definitive treatment.*—To be undertaken only under the proper conditions and according to the principles outlined in "Requirements of Early Definitive Treatment." Careful history of the injury should be followed by examination of the hand to determine: (a) location and extent of the wound, (b) source of major bleeding, (c) presence of foreign material, (d) function of tendons, to be tested against resistance, (e) function of intrinsic muscles, (f) condition of nerves as regards both sensory and motor functions, and (g) integrity of bone and joint.

Following anesthetization of the patient and application of hemostatic blood pressure cuff (not to be inflated above 300 mm.), definitive treatment of the wound consists of: (a) thorough cleansing of wound region and then of entire hand and forearm with soap and water or bland detergent, (b) removal of foreign material from the wound, (c) careful, gentle, thorough, but conservative, excision of devitalized tissue, sparing all structures that may survive, (d) repeated cleansing of wound by irrigation with warm normal saline solution, and (e) securing and ligation of divided blood vessels.

These general measures are followed in appropriate cases by repair of damaged structures. Proper wounds for this repair are: (a) those in which infection has not become established, (b) those not grossly contaminated by highly infective material, (c) relatively clean wounds not more than three or four hours old.

In general, wounds not fulfilling these criteria are better left unrepaired to await secondary closure and later reconstructive surgery. They should, nevertheless, be as carefully cleansed of foreign matter and dead tissue as are those prepared for primary closure. In such cases severed nerve ends may be identified with nonabsorbable sutures or lightly united.

Repair of damaged structures includes:

A. *Nerves.*—(a) All severed nerves should be repaired, including the digital nerves. (b) Fine arterial silk on fine needles should be used, accurately approximating the nerve ends by small interrupted sutures placed around the periphery. These sutures should include only the perineurium, not the nerve bundles. It is important to avoid axial rotation, particularly in nerves having both motor and sensory function. (c) Nerves are to be distinguished from tendons, especially at the wrist, by their anatomic position, softer texture, pinker color, small surface capillaries and distinct nerve bundles seen on cut ends. Pulling on a nerve will not flex a finger. (d) Nerves should be handled gently, never crushed, rubbed, or allowed to become dry.

B. *Tendons.*—All severed tendons should be repaired, including the tendons of intrinsic muscles. An important exception to this rule concerns flexor tendons severed within the flexor sheath or in the digital flexor canal. Primary suturing of the flexor profundus in this location rarely succeeds in restoring useful function even if the flexor sublimis is removed. Suturing both flexor sublimis and profundus in this area almost invariably results in failure. Should even minor infection occur, failure is assured. With rare exceptions, it is sound practice to repair the skin and digital nerves only, leaving the flexor tendons for secondary reconstruction when severed in this region. (b) Nonabsorbable sutures of silk or wire are used accurately to approximate the severed tendon ends after they have been cleanly squared off with a sharp knife. (c) Additional incisions to secure retracted tendon ends should follow flexion creases. They should be curved or transverse, never longitudinal, and never in the palmar or dorsal midline

of a finger. (d) Tendons should be handled gently; never crushed, rubbed, or allowed to become dry.

C. *Muscle.*—(a) Severed muscles should be lightly approximated with interrupted mattress sutures, avoiding tension and constriction. (b) Muscle thus repaired should be alive, contractile and vascular, all devitalized shreds being trimmed away.

Following these procedures, the hemostatic blood pressure cuff is released to permit identification, control and ligation of bleeding vessels. The field should be dry before closure of the wound.

D. *Fascia.*—Severed fascial and ligamentous tissue should be repaired with interrupted mattress sutures, avoiding tension.

E. *Subcutaneous tissue.*—Subcutaneous fatty tissue may be lightly approximated with interrupted fine sutures.

F. *Skin.*—The skin should be closed with fine, nonabsorbable sutures.

G. *Dressing.*—Firm pressure dressing is applied, the fingers being separated, with gauze between them. The hand is immobilized by splinting in the position of function, except when suture of severed tendons requires splinting in a position to insure the least strain on their suture lines. If nerves have been severed, the position of function is particularly important to prevent deformity due to contracture of active muscles when their opponents are denervated and paralyzed.

2. *Aftercare.*—(a) Antibiotics and tetanus antitoxin (or toxoid) are administered systemically as prophylaxis against infection. (b) The extremity is kept elevated for the first three or four days. (c) Dressings are not removed for several days, usually one week, unless infection develops. (d) The healing of severed tendons and nerves requires three weeks of uninterrupted immobilization. (e) When nerves are severed, corrective splinting is necessary until reinnervation of paralyzed muscles has occurred. (f) Restoration of function is best secured, after healing, by directed voluntary exercises and appropriate occupational therapy.

V. FRACTURES AND DISLOCATIONS

The purposes of treatment of closed fractures and dislocations of the bones of the hand are: (a) protection of the injured bony structures from further displacement and avoidance of added damage to soft parts, (b) restoration of normal relations of the bony structures, (c) maintenance of the corrected relation of the bones to permit healing, at the same time avoiding stiffening in position of nonfunction, and (d) restoration of function. These objectives are sought in the various stages of treatment.

1. *First Aid Treatment.*—(a) Avoid manipulation or attempts at reduction until skilled attention is available and accurate diagnosis has been made, (b) prompt protection of the hand by complete immobilization in the position of function pending definitive treatment.

2. *Definitive treatment.*—When proper skill and facilities are available, this consists of:

A. Diagnosis by means of: (a) Inspection to determine swelling, eechymosis, deformity, loss of function, (b) palpation, gently employed, to discover bony irregularity, point of maximum tenderness, referred pain. This sign is of importance in discovering fractures of the long bones, particularly where deformity may not exist or is concealed by swelling. Gentle pressure in the line of axis of the long bone will result in pain at the fracture site, and (c) x-ray examination is obligatory where fracture or dislocation is suspected. Injuries in the region of the carpus require not only anteroposterior and lateral views but two or more oblique views in addition. Fractures of the carpal bones frequently fail to show in anteroposterior and lateral views.

B. Reduction: Restoration of normal position of bony structures should be secured at the earliest possible time by: (a) Manipulation. Whether reducing a fracture or a dislocation, full relaxation, preferably under general anesthesia, is desirable. Manual traction, pressure and moulding should be gentle and deliberate to avoid further soft part injury. When attempts at reduction by manipulation are not promptly successful under these conditions, they should be abandoned in favor of open (operative) replacement. Dislocation at the metacarpophalangeal joint of the thumb will almost invariably require open reduction. (b) Skeletal control. To maintain reduction, particularly of oblique or comminuted fractures of phalanges or metacarpals or fractures into joints, control by skeletal fixation may be required. This may be applied by means of a length of thin Kirschner wire inserted transversely through the distal end of the fractured bone or through the terminal phalanx of the finger. The hand and injured finger or fingers should be supported in the position of function on a palmar moulded curved form or ball splint. This alone will ordinarily suffice to maintain proper position after reduction by manipulation. When control by skeletal fixation is required for maintenance of reduction, the transfixing wire may be connected to this splint on its palmar aspect or to a projecting frame, at or above wrist level, by elastic bands. Fixation or traction by means of a hole in the finger nail, or by adhesive applied to the finger, or by woven constricting device is not satisfactory. Continued straight traction on the fingers in the extended position is to be avoided. (c) Open reduction. When manipulation fails to produce satisfactory reduction, open operative reduction is to be employed. This requires careful preliminary skin preparation and should be carried out under

optimum operating conditions as described in "Requirements of Early Definitive Treatment."

3. *Maintenance of Reduction.*—Immobilization of bony injury following reduction should: (a) be secured with firm, even pressure bandaging, permitting no motion at site of injury, (b) be nonconstricting, not interfering with circulation, (c) be comfortable, causing no excess pressure, (d) preserve, as far as possible, the position of function, taking into account the normal concavities of the palmar surface of the skeletal structure (arches of the hand) and flexor surface curves of the phalanges. (Wrist in 30 degree dorsiflexion, metacarpophalangeal and distal interphalangeal joints in 45 degree flexion and middle interphalangeal joint in 90 degree flexion.) Flat splinting is to be condemned. (e) leave free to move all joints whose motion will not jeopardize position and healing; during immobilization, active motion of all joints not necessarily confined is to be encouraged.

Immobilization may be accomplished by: (a) splinting or plaster casting, applied as described in "Reduction." (b) Internal fixation. Kirschner wires may be employed, following either open or closed reduction, as axial intramedullary splints for individual long bones (not to protrude into a joint); as transversely introduced fixation pins passing through adjacent bones to secure the fragments of metacarpal fractures; as penetrating fixation for fragments of carpal fractures. Wiring or plating of fractures of the bones of the hand is generally unsatisfactory.

During the early period of immobilization, elevation of the hand is desirable. Immobilization of the injury should be consistent and continuous until healing and firm union have been established.

Healing of ligamentous injuries accompanying dislocations requires two weeks of immobilization following reduction.

Healing of fractures of the long bones requires immobilization for from three to five weeks.

Healing of carpal bone fractures requires from twelve to fourteen weeks' immobilization. Fractures of the navicular may require four months to unite. If immobilized consistently for this length of time, most of these fractures will not require surgical intervention.

4. *Restoration of function.*—During the healing process, all joints not necessarily immobilized should be freely moved to activate their controlling muscles and their use by the patient encouraged.

Following establishment of healing or firm union, restoration of function is secured by directed action motion, particularly through the means of exercise and occupational therapy.

OPEN FRACTURES

Major wounds of the hand may be caused by crushing or tearing injuries, injuries from explosions or by the impact of foreign bodies. Such wounds may involve damage to skin by burning or avulsion, laceration of soft tissues and open injuries of bones or joints. The purposes of early treatment are: (a) relief of pain and shock, (b) arrest of hemorrhage, (c) protection against infection and further injury, (d) removal of foreign bodies and dead tissue, (e) conservation and restoration of damaged structures, (f) early healing, and (g) restoration of function.

1. *First aid Treatment.*—(a) Application of voluminous sterile dressing without interference with the wound, the hand being placed in the position of function, (b) hemostasis can usually be obtained by pressure gently applied to such a dressing; a tourniquet is rarely needed, but may be employed briefly to check brisk, continuing blood loss, (c) shock and pain may require appropriate treatment, (d) the hand, in initial dressing applied as above, is splinted in position of function for transportation to adequate surgical facilities (see Article II).

2. *Definitive Treatment.*—

(a) If bones or joints are thought to be involved, preliminary x-ray views are made without disturbing the initial dressing.

(b) Patient is treated systemically for pain, shock and hemorrhage; antibiotics and tetanus antitoxin (or toxoid booster) are administered, and the patient prepared for operation.

(c) In operating room, with patient anesthetized, dressing is removed.

(d) With the wound carefully protected, the arm, forearm and hand are scrubbed, shaved and draped.

(e) The skin wound and the area about it are carefully and gently cleansed with soap and water or mild detergent (no antiseptics) and the entire wound examined. Bleeding vessels are ligated.

(f) Foreign material and devitalized tissue are accurately trimmed away. This procedure aims at thoroughness, but must strictly conserve the maximum of viable tissue. It is particularly important to preserve skin and all bone fragments which are not completely free and displaced.

(g) Repair of soft tissue injuries is governed by criteria of length of time since injury and of the degree and nature of contamination (see Article IV). Where conditions are favorable (i.e., in relatively clean wounds not more than three or four hours old), initial repair may be effected within limitations described in Article IV. Even in unfavorable cases, severed nerves should be united if possible, or at least identified by long sutures of stainless steel.

(h) Dislocations of joints, if open in the wound, are reduced.

(i) Bone fragments in the open wound are restored as nearly as possible to normal position, but without fixation by foreign material. In some instances the employment of stabilization

with a minimum of stainless steel wire is justifiable if required to maintain reduction.

(j) Maintenance of reduction of open fractures may usually be obtained by skeletal traction or appropriate splinting (see Article V). If required, pins for bone fragment fixation or skeletal traction are applied as there described.

(k) Maximum skin closure is effected (see Article IV). Particular care is taken to cover bones, joints, tendons and nerves. Where required, pedicle skin grafts (local or from abdominal wall) may be used for coverage unless established or inevitable infection forbids.

(l) Pressure dressing is applied and the hand splinted as required for optimum control of its repaired injuries, approximating as closely as possible the position of function (see Articles IV and V). Flat splinting is to be avoided. Uninjured parts of the hand should be left free for movement. The hand is kept elevated.

3. *Subsequent dressings.*—These are managed with regard to the following factors named in the order of their importance: (a) control of infection, adequate drainage, (b) establishment of bony union and joint healing, (c) early completion of skin coverage and healing.

A. The establishment of infection in the wound may require early and frequent dressings to insure its control. These should be done under aseptic conditions and in such manner as not to disturb the corrected position of injured bones or joints.

B. Large skin defects should be covered by grafting at the earliest moment compatible with the maintenance of position of corrected bone and joint injuries (see Article III).

4. *Restoration of function.*—Following healing of skin and soft tissues and firm union of bony structures, as much function as possible should be restored by directed active use of the hand, therapeutic exercises and occupational therapy.

Reconstructive surgery is often required after such injuries to permit maximum restoration of function. Such reconstruction will be less extensive and less formidable if the early management of the injury is judiciously and carefully carried out.

TRAUMATIC AMPUTATIONS

The loss of part of the hand by injury may result from cutting, tearing or crushing wounds. Such injuries almost invariably produce one or more open fractures. There are often associated injuries of the remaining parts of the hand. Such injuries require appropriate treatment, as outlined in previous articles.

The purposes of early treatment of traumatic amputations are: (a) to relieve pain, control hemorrhage and combat shock, (b) to conserve all viable tissue possible, (c) to prevent or control infection, (d) to secure the maximum restoration of damaged structures, (e) to secure healing at the earliest possible time, and (f) to restore the injured hand to maximum usefulness. These objectives are sought by:

1. *First aid treatment.*—All tissues not actually severed from the hand should be retained. Without attempt at cleansing or the application of any antiseptic, a voluminous sterile dressing is applied and bandaged with firm, even pressure. The hand is immobilized by splinting in the position of function and kept elevated.

(b) The pressure dressing usually will suffice to control the loss of blood. If it does not and free hemorrhage persists, the use of a tourniquet, properly applied, may be necessary. This should not be left in place more than forty-five minutes.

(c) Appropriate measures should be taken to control pain and combat shock.

Proper conditions for definitive treatment should be sought at the earliest possible time (see Article II).

2. *Definitive treatment.*—Under operating room conditions and following x-ray study of the hand with first aid dressing in place, the following measures of definitive treatment are appropriate: (a) cleansing of the injured area and evaluation of the injury under pneumatic tourniquet hemostasis if necessary (see Article IV), (b) arrest of hemorrhage by ligation of injured vessels, (c) thorough but gentle removal of foreign substance and excision of devitalized tissue, sparing all that may live (see Article IV), (d) repair, as far as practicable, of damaged structures and reduction of fractures and dislocations. This repair should aim particularly at the protective covering of bones, tendons and nerves. Maximum skin coverage should be provided at once by (1) utilization of local skin, (2) free split thickness grafts, or (3) employment of an abdominal or thoracic pedicle graft.

Where skin loss is extensive, or in stripping or denuding amputations of digits (especially the thumb) leaving bone exposed, the application of a pedicled skin graft is desirable.

Local skin should not be employed if the preparation of flaps requires further amputation or sacrifice of living bone. Thus, the stump of an amputated digit should be left at full length and be covered by appropriate graft, either immediate or delayed. Sacrifice of finger length by formal re-amputation is to be condemned.

Partially amputated parts of digits should be retained and lightly sutured in place with skin stitches only. Many will survive and may subsequently be restored to usefulness.

(e) Retention of reduced incidental fractures or dislocations by appropriate splinting or fixation (see Article V), (f) application of firm pressure dressing, the hand (except when fixed to the body for grafting) being splinted in the position of function, (g) administration of tetanus toxoid or antitoxin and antibiotic drugs.

3. *Subsequent care.*—A. Dressings: Unless ev-

idences of infection develop, the dressing should be left in place for a sufficient time to permit healing of initially closed wounds or the firm taking of grafts (seven to ten days). Coincidental fractures require additional periods of immobilization to assure union (see Articles V and VI).

B. Surface healing: If skin coverage has not been completed at the time of initial definitive treatment, or if grafting has failed, preparations should be made to place or replace skin grafts at the first postoperative dressing. Denuded areas should be given skin coverage at the earliest possible time.

C. Restoration of form and function: When healing is complete a program should be developed and prosecuted for (a) restoration of function by exercise and occupational retraining, (b) reconstructive surgery to render the hand remnant as useful as possible, or (c) preparing the stump for prosthesis.

BOOK REVIEWS

SCIENCE OF HEALTH, THE, by Florence L. Meredith, B.Sc., M.D., Fellow of the American Medical, American Public Health, and American Psychiatric Associations. Second Edition. The Blakiston Company. Philadelphia, Toronto. 1951. Price $3.75.

The second edition of "The Science of Health," by Florence L. Meredith, is a delightful and refreshing change from the ordinary book of this kind. It is a carefully prepared work, exact in detail and informative and helpful to any reader. The school teacher, the nurse and the medical student will all be helped by a careful and repeated reading of this work. It should prove to be a good refresher course for the medical practitioner. It covers the ground fully from base anatomy, physiology, hygiene, preventive medicine and it deals clearly and understandingly with nervous and mental conditions. The section on the problems of communicable disease is clear, concise and helpful.

In many lines of health instruction, this book should give much aid and it is entitled to wide circulation.

S. C.

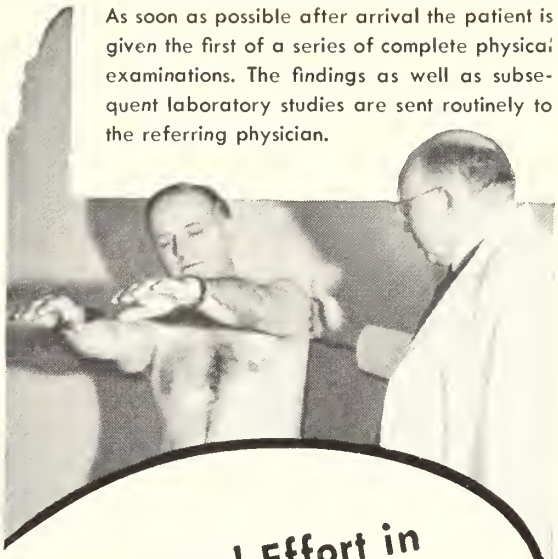
THE SPECIALTIES IN GENERAL PRACTICE. Edited by Russell L. Cecil, M.D., Professor of Clinical Medicine, Emeritus, Cornell University Medical College, New York, New York, with articles by various doctors. W. B. Saunders Company, Philadelphia and London. Price $14.50.

This book, edited by Cecil, consists of fourteen chapters, each comprising one specialty and each written by a specialist in that field.

The quality of the writing, consequently, is variable and the value of each chapter to the individual reader, depends greatly on the reader's background.

In general, while each chapter is a sort of short textbook of the particular specialty, this reviewer feels that reference to the larger textbooks would probably represent a more useful application of the reader's time.

B. S. P.



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PRESIDENT'S PAGE

The President's Commission on the Health Needs of the Nation met in St. Louis on September 15. One of the members of the Commission, Dr. Evarts A. Graham, presided at the one day hearing.

Representatives of medical, hospital, nursing, dental, farm and labor organizations as well as governmental health agencies presented their views.



Persons appearing, not more than one from each organization, were limited to ten minutes each.

The Commission, composed of fifteen members, was appointed by President Truman on December 29, 1951, and it has one year in which to make its report. The President stated at the time the Commission was appointed that "the Commission shall study the facts and present its recommendations for safeguarding and improving the health of the nation." Dr. Paul B. Magnuson is Chairman.

The Association's statement called attention to the great improvements in health care in the state during the last fifty years. Progress toward meeting health needs of the state outside the metropolitan areas was pointed out under three general headings: availability of medical services, cost of medical service and physical facilities.

J. William Thompson M.D.

Editorials

MORTALITY IN THE AGED

Spectacular reductions in mortality at the earlier ages of life have tended to obscure the appreciable improvement that has occurred in old age, the *Statistical Bulletin* of the Metropolitan Life Insurance Company points out.

In less than twenty years, from 1930 to 1949, the death rate for white women in the United States decreased 25 per cent at ages 65 to 74 years and 20 per cent at the ages 75 to 84 years. Although the record is not favorable for white men at the older ages, the decreases in mortality among them have been far from negligible.

Particularly significant is the fact that in each sex virtually all the gains have been made since 1936—that is, in the period immediately following the introduction and development of the sulfa drugs and subsequently of the antibiotics.

Further insight into the trend of mortality in old age is gained from the course of the death rate from the leading causes—the principle cardiovascular-renal diseases, cancer, pneumonia and influenza, and accidents, which together now account for more than four-fifths of all deaths among white persons in the age group 65 to 84.

The sharp reduction in the mortality from pneumonia and influenza gives dramatic testimony to the efficacy of the revolutionary advances made in the treatment of the respiratory infections. At ages 65 to 74 the death rate from pneumonia and influenza dropped 60 per cent among white men and 73 per cent among white women in the period from 1930 to 1948, the latest year for which comparable data are available; even at ages 75 to 84 the reductions were 51 and 64 per cent, respectively.

For the cardiovascular-renal diseases, which dominate the mortality picture at the advanced ages, the outstanding feature is the lower level of the death rate in the postwar years, during which period the antibiotics came into widespread use. The recent development has been especially large among women. As a result, the excess in male mortality from these diseases has increased materially. For example, whereas the death rate at ages 65 to 74 was 20 per cent higher for males than for females in 1930, the difference was 50 per cent in 1948.

The trend of mortality from cancer shows an even greater sex difference. For white men the trend has been definitely upward since 1930 in the age range of 65 to 84 years; for white women, however, an improvement is evident in the death rate at 65 to 74 years; at ages 75 to 84 the rates have been fairly stable.

In the same period, considerable progress has been made in reducing the death rate from accidents among older people in each sex.

It appears likely that further progress will be made in reducing the general death rate among the aged in this country. For one thing, the control already achieved in the infectious diseases insures that in the years to come a decreasing proportion of people entering the older ages will have serious organic impairments of infectious origin. At the same time, medical care and public health facilities are improving in quality and are spreading into all areas of the country; official and private health agencies are giving added support to health education, community programs and medical research; and the rapid growth of voluntary hospital, surgical and medical care insurance is encouraging large numbers of people to give early attention to their ailments, when they are generally most amenable to treatment.

All of these developments will help men and women to survive to extreme old age. This means, of course, that the problems of the aging population will constantly become more intensive and challenging.

HEALTH PLANS SHOW WIDE GAIN

More persons were protected through voluntary plans in this country against sickness and accident in 1951 than ever before, results of a survey released by the Health Insurance Council of the Institute of Life Insurance in its annual report on accident and health coverage in the United States.

After allowing for duplication of coverage, there were 85,991,000 people who had protection against hospital expenses when 1951 ended, an increase of 12 per cent over the 76,961,000 persons covered a year earlier. This is an increase of 70,000,000 in the last ten years.

Surgical expense protection covered 65,535,000 persons at the close of 1951, and increase of 20 per cent over the 1950 number of 54,477,000. Ten years previously, in 1941, there were fewer than 7,000,000 persons estimated to have had such protection.

In the field of medical expense protection, the number was extended to 27,723,000 persons at the end of 1951, a gain of 28 per cent over the number at the end of 1950, or 21,589,000. Only 3,000,000 persons were covered against medical expense in 1941.

The oldest form of voluntary health insurance in this country is protection against loss of income resulting from disability and approximately two thirds of employed persons in the United States have this form of insurance. It showed an increase of 6 per cent in the last year.

In the survey insurance companies, Blue Cross, Blue Shield, local medical societies and independent plans adopted by industry, employee benefit associations and private clinics were included.

Organization and Economics

NEWS NOTES

The next Missouri State Board Examination will be given in Kansas City on October 24 and 25, the Missouri State Board of Medical Examiners, Jefferson City, has announced.

Frank Hurwitt, M.D., Kansas City, has been appointed medical coordinator for the Missouri Civil Defense Agency, Jefferson City.

The Missouri Society for Neurology and Psychiatry will meet on Saturday, October 4, at the Sheraton Hotel, St. Louis.

The Seventieth General Hospital Unit, the St. Louis University Unit which served in Africa and Italy in World War II, held its second reunion in St. Louis, August 30 through September 1.

The General Practitioners Study Club of Greater St. Louis will meet on October 15. The speaker will be Robert W. Bartlett, M.D., St. Louis, who will speak on "The Differential Diagnosis and Treatment of Cancer of the Colon and Rectum."

Claude J. Hunt, M.D., Kansas City, was the guest speaker at a luncheon meeting of the Club Presidents Round Table on August 4 and at a luncheon meeting of the Mercury Club on August 5.

William H. Olmsted, M.D., St. Louis, has been elected treasurer of the American Diabetes Association and appointed vice chairman of the association's committee on detection and education.

MUSINGS OF THE FIELD SECRETARY

"Testing the Drinking Driver" was the exhibit of the Missouri State Medical Association at the 1952 State Fair. It was shown under the sponsorship of the Association's Committee on Health and Public Instruction and its Committee on



The Missouri State Medical Association's exhibit at the 1952 State Fair.

Alcoholism. The major portion of the display was secured from the Committee on Scientific Exhibit of the American Medical Association. However, the Missouri State Highway Patrol and the Kansas City Police Department made available valuable items for enhansing the value of the exhibits.

This unique exhibit, which was located in the Educational Building, attracted great interest on the part of many of the 422,000 people who attended the Fair in spite of hot weather and tornadoes. Attesting to this fact were the large groups frequently blocking the wide passageway while they absorbed the information so graphically presented by the display.

One question relating to the showing of such type educational exhibits may well be pondered —how can the value of these exhibits be objectively determined or judged?

NEW MEMBERS

Allen, William C., M.D., Glasgow.
Gurnee, Landon H., M.D., Jefferson City.
Szymanski, Stanley R., M.D., Moberly.

DEATHS

Ormsbee, James L., M.D., Springfield, a graduate of the Missouri Medical College, St. Louis, 1891; honor member of the Greene County Medical Society; retired; aged 85; died July 9.

Appleberry, Dailey, M.D., Rivermines, a graduate of Barnes Medical College, St. Louis, 1906; member of the Mineral Area County Medical Society; retired; aged 67; died August 3.

Luten, Joseph B., M.D., Caruthersville, a graduate of the University of Louisville School of Medicine, 1898; honor member of the Pemiscot County Medical Society; aged 76; died August 24.

Salyer, Charles E., M.D., Hannibal, a graduate of St. Louis University School of Medicine, 1904; honor member of the Marion-Ralls County Medical Society; aged 83; died August 26.

CLAY COUNTY TO HOLD CONFERENCE

The Clay County Medical Society will hold its annual Clinical Conference on Thursday, November 6, at the Elms Hotel, Excelsior Springs. Members of the Missouri and Kansas state medical associations are invited to attend.

Many outstanding physicians have been selected to participate in the program which has been arranged especially for the general practitioner. Attendance of physicians may be credited toward postgraduate requirements of the American Academy of General Practice.

The Auxiliary of the Clay County Medical Society has prepared an afternoon and evening of entertainment for the wives of physicians attending the Clinical Conference.

MEDICAL SECRETARIES AND ASSISTANTS MEET

The Missouri State Medical Secretaries and Assistants Society held their second quarterly meeting in Sedalia on July 27 with Mrs. Nita Fabac, Kansas City, president, presiding.

Miss Hazel Palmer, Sedalia, gave the principle address, her subject being "Ethics." Drs. J. E. Lamy and C. G. Stauffacher and Mrs. Stauffacher, all of Sedalia, spoke before the group.

The next meeting will be held in Springfield on October 19.

DIVISION OF HEALTH OF MISSOURI

Missouri Hospital Program

Although health facilities are being provided to the State of Missouri as rapidly as the small amount of federal funds permit, they are far from the goal as prescribed by the State Plan wherein is reflected a general bed deficiency of 3,388 beds yet to be built. In the category of teaching hospitals there has been but a meager approach to this critical need and it is hoped that this category can be increased in the near future. Regarding facilities for mental health, a great step forward has been taken in establishing in Kansas City an eighty bed psychiatric receiving unit, and a 100 bed receiving unit for Washington University in St. Louis, indicating, too, that of a recorded deficiency of some 7,300 beds the surface merely has been scratched.

In the category of tuberculosis, showing a deficiency of 891 beds, that is now lowered to 822 beds with hopes of further reducing this lack of tuberculosis facilities. Health centers for the State of Missouri as programmed are in number thirty-seven. Of this number two have been built and two approved, leaving a balance of thirty-three to be built, indicating only a small percentage of need met.

Relative to the chronic patient needs in Missouri it has been shown by survey that there are some 6,555 beds for this category of which only a small percentage has been programmed although several existing hospitals are now contemplating adding facilities for the treatment of chronic illnesses. It is a definite aim of the Division of Health to place the chronically ill in close proximity to modern medical and surgical treatment facilities and what few chronic beds approved to date have been placed as units of general hospitals.

The State survey indicates that many patients now being cared for in general hospitals should be classified as chronic patients. An example is the case of heart disease, which obviously includes a great number of the chronically ill and uses a great number of general beds.

There is now a determined effort on the part of the Division of Health to arrive at a more intelligent valuation of the chronic illness situation in Missouri in not only providing facilities but in promoting the employment of professional personnel to administer to these chronic patients. It is the fervent hope of all who are working for better health that more Missourians have ways and means available in the near future for the proper treatment of the chronically ill.

Illegitimate Births

Legitimacy status of a child creates many problems

for the doctor. Most of these problems stem from the lack of specific laws, as is the case in Missouri. Following are two rules which cover most cases on birth, death and stillbirth certificates. The 1948 law provides that disclosure of illegitimacy, or of any information from which it may be determined, shall not be released from the records of the Bureau of Vital Statistics, except on court order or when necessary for a claim against the federal government. For this reason, legitimacy status is shown now on the confidential portion of the birth certificate. It should be emphasized that the omission of a father's name on the record does not legally imply that the child is illegitimate under the new law. However, the addition of an alleged father's name can cause the mother considerable trouble.

In the absence of state law, the Missouri Attorney General ruled in 1935 that an illegitimate child is the child of no one: neither the father nor the mother. Such a child has no name whatever until he acquires one through usage or through marriage of the mother to the natural father or through adoption. This ruling has led to these two rules that the Bureau of Vital Statistics now requests the doctors to use:

1. If a child is of doubtful paternity, no name is given the child and no name and no facts are shown for the father on a birth, death or stillbirth certificate.
2. The mother must sign the birth certificate in item 17 in such cases, using her legal name.

An original, correct record must be filed for every child (within ten days for live births, with three days for deaths and stillbirths). For a child of doubtful paternity, it is absolutely essential that a correct record be filed promptly. Otherwise, the child suffers because he has nothing in the files in Jefferson City to amend when he does acquire a legal father. To amend a record, the parent, foster parent or legal guardian should inquire directly of the Bureau of Vital Statistics, Jefferson City, Missouri, identifying the child's record.

Restaurants

From the Bureau of Food and Drugs

During the last few years considerable more interest has been evidenced by the medical profession in the State of Missouri in regard to correction of local health conditions. The Division of Health has been approached by a number of physicians who are desirous of improving or stimulating interest in a local food sanitation program.

In setting up such a food sanitation program, a number of approaches may be used, depending upon the community involved and what health services are available in that locality. The entire food sanitation program rests upon the education of the proprietors of such establishments, the public and the responsible enforcement officials.

Let us examine a little more closely some of the methods by which a food sanitation program may be established.

1. Adoption of city ordinances enforced by city personnel.
2. Adoption of city ordinances enforced by county health units.
3. Cooperative enforcement by two or more cities, using only one sanitarian.

A city or town may set up a local food sanitation program by adopting a city ordinance. Before such an ordinance is adopted, however, the city should make the necessary financial arrangements for the employment of a qualified public health sanitarian to carry out the education and enforcement activities as required under the city ordinance. The success or failure of this program often depends upon the ability of the public health sanitarian to interpret in a fair and impartial, but firm, manner the public health reasons and the requirements of the city ordinance. It should be clearly stressed to the city officials that the mere passing of an ordinance is not sufficient to correct the insanitary conditions existing. Unless sufficient financial means are available to provide for efficient enforcement, it is not recommended that such ordinances be adopted.

The second method may be utilized where a city is located in a county which has a county health unit. It is sometimes agreeable with such county health units for the city to designate the county sanitarian as the enforcing agency for the city ordinance, thus preventing an undue financial burden on the city and at the same time obtain more uniform inspection throughout the county. It should be pointed out that such arrangements should me made with the local board of trustees of such county units before initiating such a program.

In the event that two or more nearby cities desire to provide a food sanitation program, but are financially unable to obtain the necessary competent public health personnel, they may be able to solve the difficulty by a joint or cooperative effort of pooling their resources. The municipal officials of the city in question agree on how much time the public health personnel will spend in each city and each one in turn will pay his share of the financial cost of such services. In this way personnel may be employed at a salary which will attract qualified individuals which would be impossible for the one city alone. There are now several programs in which this method of operation and financing has been successfully carried out.

The people of any given community naturally turn toward the medical profession for leadership, advice and counseling on all matters pertaining to health in their respective community. It is believed that the medical profession might help to raise the sanitation standards of the eating and drinking establishments by taking the initiative in setting up such programs and by actively supporting the local health programs where such programs are based upon full cooperation and backing of local officials and citizens.

CORRESPONDENCE

JOHN ZAHORSKY, M.D.
STEELVILLE

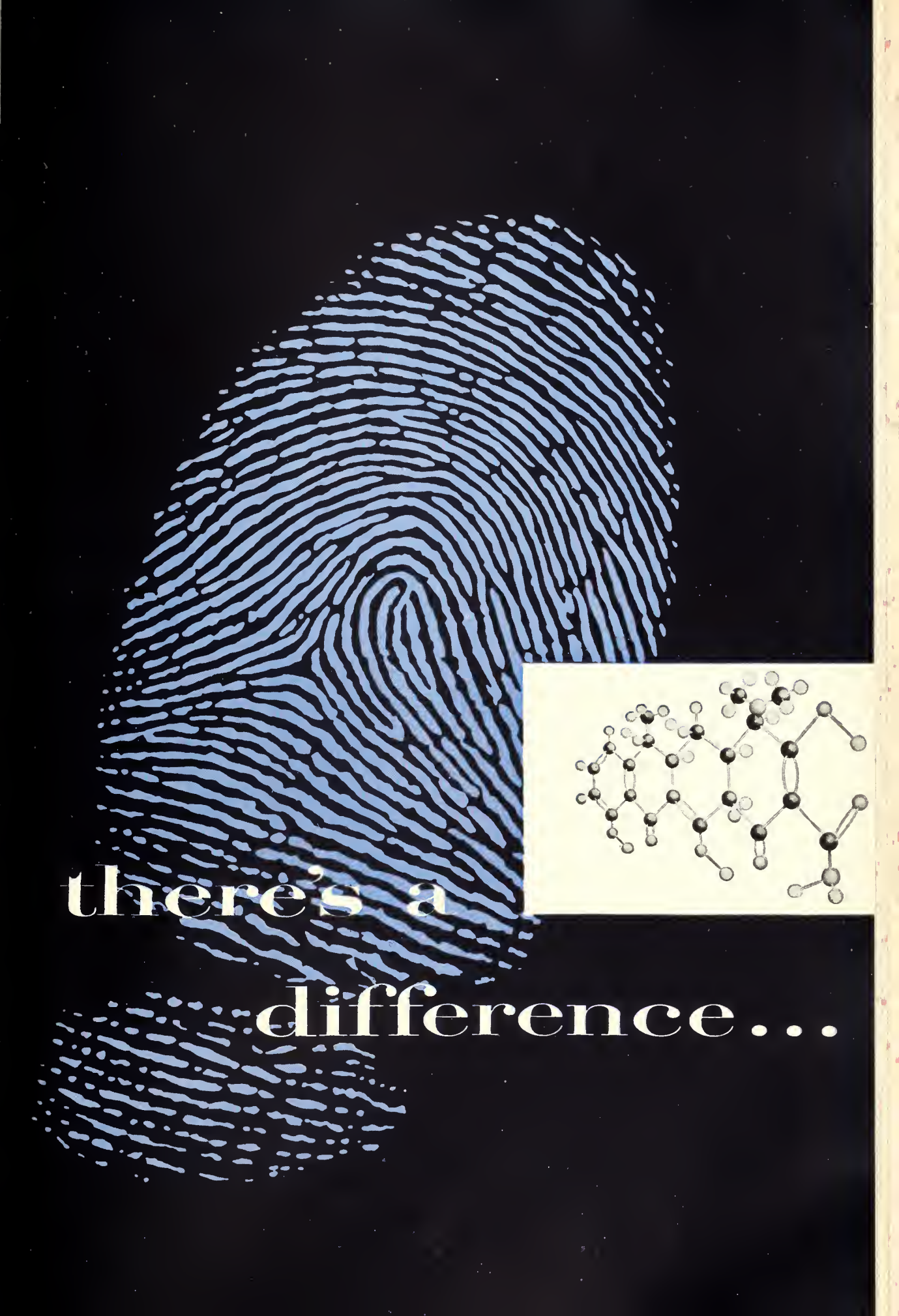
Emeritus Professor of Pediatrics,
St. Louis University School of Medicine

To the Editor:

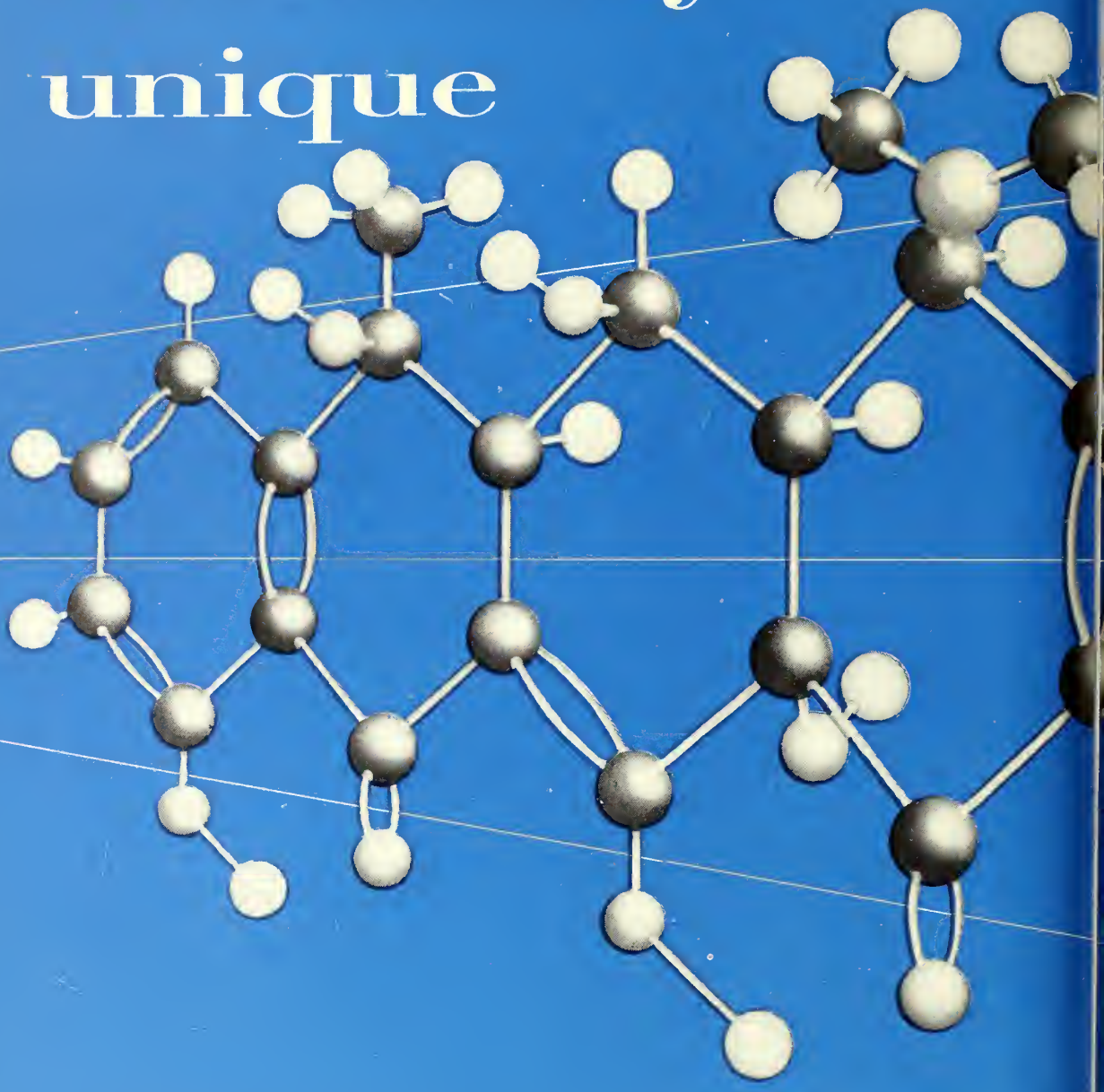
Crawford County

Crawford County, a rugged part of the Ozarks, contains about 10,000 inhabitants. In the latter part of the Nineteenth Century, Steelville, the county seat, supported three excellent physicians. Cuba, another town north of the river had as many more. Villages,

This is the fifth of a series of letters to the Editor from Dr. Zahorsky.


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as Bourbon, Leasburg and Dillard also were the dwelling places of doctors. The practice then was somewhat crude and laborious but, nevertheless, the county was well supplied. During the years of 1890 to 1910 at least seven students, the majority from Crawford County farms, studied medicine and most of them served in a rural practice thereafter. After 1910 not a single county boy became a physician. For forty years no student of medicine! The old doctors died; then Steelville and Cuba expectedly became the residence of the physicians from the surrounding villages. Altogether the practice remained primitive although malaria, typhoid fever, pneumonia and other diseases exacted a high death rate. Only a decade ago medicine was practiced in this county by three old doctors, each about 70 years old.

Did the citizens clamor for a young doctor? Surely they did, but not until five years ago did one arrive, Dr. Elders at Cuba, a Washington University graduate. A year ago Dr. Dubeck, a St. Louis University graduate located in Steelville.

During all this time did the county lack medical service? No. Two or three osteopathic physicians moved in. Most of the rural people were satisfied, but so many expectant mothers traveled to St. Louis (100 miles) to have their babies. Even last year eighty women were taken to some hospital, mostly in St. Louis, to receive medical care during parturition, although Dr. Robey, the osteopath at Steelville waited on 60 to 80 women annually.

The experience of Steelville was duplicated in other Ozark regions. The medical schools failed to supply the demand. To make the needs clear, and adopt the standard suggested previously, we should have eight physicians; now we have only two M.D.'s and three osteopaths, not counting three other men who are octogenarians.

Can the county support so many physicians, say four regular and three osteopaths? I think so, if the people acquired a full confidence in the skill of the local physicians. They can not depend on the assistance of adjoining counties for they also are understaffed.

If I look at the vital statistics of Crawford County, as given by the State Health Division, for the year 1948, I cannot be elated. The total death rate was high, 11.3. The pneumonia and influenza death rate was high, 120, and the infantile mortality was too high, 46.5 under 1 year and 42 neonatal death rate. Fortunately, no maternal death occurred, but 70 of the mothers had their babies elsewhere.

The figures for 1946 are much better but the birth rate was greater, and pneumonia still took a high death toll, 80. One maternal death occurred. The regular physicians waited on 38 women in their homes, the osteopaths on twice that number. In 1948, the regular physicians waited on 40, and the osteopaths 79. In a hospital, 60 to 100 miles distance, eighty mothers had their babies. Some of them admitted that they did not have confidence in their local doctors.

What does Crawford County need now? Two regular physicians and two osteopaths are available. In my estimate, four more practitioners are essential to good rural medicine. Where can they be gotten? When will some of our superior boys have a chance to study medicine?

Cedar County, in 1948 (population 10,000) deserves a medal. Perhaps it is fortunate in having on call an adequate number of practitioners: Ratio 1 to 1,000. Nine practitioners serve this county, 6 M.D. and 3 O.D. No maternal deaths, only 1 stillbirth, and congenital malformation only 1 (rate 10). Compare this record with that of Crawford County. Best of all —only two deaths of infants under 1 year of age. The 1946 record is also favorable.

Altogether, one gets a definite impression that the counties which support one practitioner to each 1,000 inhabitants have superior service.

A comparison between two other counties is interesting: Harrison County and Douglass County. The former on the Northern border, the latter near the Southern boundary. In the year 1948, both counties produced about the same number of live births, although the population is somewhat larger in the Northern county. Here is the record:

Harrison County: Population 15,000, practitioners 19 (M.D. 9, O.D. 10), birth rate 17.7, number of live births 263, stillbirths rate 15.2, neonatal death rate 3.8, deaths from congenital malformations rate 6.7, no maternal deaths (a wonderful record). Its birth rate was low and the death rate was about the average shown by the state. The deaths from pneumonia were low. Ratio of practitioner to population, 1 to 800.

Douglass County: Population, 12,500, practitioners 5 (M.D. 3, O.D. 2), birth rate 21.6, number of live births 266, stillborn rate 26.2, neonatal death rate 22.1, death rate from malformations 16.3, no maternal deaths. The birth rate was high and the death rate low, 8.1 (more citizens for our cities!). Deaths from pneumonia were high, death rate 47. Ratio of practitioner to population, 1 to 2,500. (Is this not a dangerous shortage?).

A longer discussion is devoted to Crawford County, as this was my boyhood home and here I now reside. For at least two decades I heard that this county needed a physician, but no one came here but osteopaths. In 1946, only one regular physician was active here. True, the directory listed three other physicians all of whom were nearing four score years and could not do much. But the osteopaths moved in and partially supplied the deficiency.

Think of it! A prosperous county with over 10,000 inhabitants served by one regular physician and three osteopaths.

BOOK REVIEWS

Cowdry's Problems of Ageing. Biological and Medical Aspects. Third Edition, Edited by Albert I. Lansing, Ph.D., Washington University, St. Louis. Printed by The Williams & Wilkins Company, Baltimore, 1952. Price $15.00.

This book is a revision and expansion of the second edition of the work published in 1942. The first and second editions were edited by E. V. Cowdry, Ph.D., Research Professor of Anatomy and Director of the Wernse Cancer Research Laboratory, Washington University School of Medicine, St. Louis. The increase in size of the volume indicates the rapid growth in the amount of contributions made in the last decade to studies in gerontology.

The general plan of the book is one of individual contributions by forty-seven gerontologists, each a specialist in his field. In the words of the editor, the book is truly "a progress report to date; an attempt

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made to convey to the reader an objective synopsis of new developments, current trends and the thoughts of a number of the present day workers in gerontology." In respect to these objectives, it is the opinion of the reviewer that a commendable task has been successfully accomplished.

Each one of the forty chapters constitutes a distinct approach to a special problem or aspect of research in the subject of ageing. As a result, the material covered in the book is extensive and the field becomes a broad one enlisting the interest not only of physicians but also of biologists, social scientists, industrialists, labor leaders and private individuals, all "working together in a constructive way."

The 1,061 pages of text present three sections: The first covers the "Biological and Cellular Problems of Ageing"; seven chapters rich in intriguing presentations of research aspects by various scientists. The second section covering many of the "Clinical and Organic Problems of Ageing" constitutes 742 of the 1,061 pages; it should prove of unusual value and interest to those physicians especially who are brought into close contact with the care and treatment of the aged and the ageing. The divisions of this section dealing with (a) cardiovascular diseases and hypertension, (b) homeostasis and ageing, (c) the respiratory system, (d) the urinary and reproductive organs including the prostate, and (e) the surgical problems in the aged, are particularly informative and up to date.

The third section is made up of four chapters covering the "Social and Economic Problems of the Ageing," eighty-eight pages of informative, timely and important reading matter.

"Cowdry's Problems of Ageing," Third Edition, will fill an important place in the doctor's library and in any library. Exceptionally valuable are the exhaustive references listed at the end of each chapter (253 on "Experimental Hypertension" alone) which make up a complete bibliography for the use of those interested. M. G.

Paul Ehrlich by Martha Marquardt with an introduction by Sir Henry Dale. Henry Schuman, Inc., New York. 1951. Price $3.50.

Martha Marquardt is the former secretary to the famous Paul Ehrlich. This book is an extension of her previous work which was published in memory of him on the seventieth anniversary of his birth, March 14, 1924. There are few copies of that book now remaining, a considerable part of the edition having been destroyed during the Nazi regime in Germany. She limited her first book to personal reminiscences of this great man during the thirteen years, up to his death in 1915, during which she was privileged to work for him.

Her book is extremely personal; that is, it is devoted to the personal attitudes, behaviorism, eccentricities and daily life of this man. As his secretary, of course, she had a good understanding of the general scheme of things at the "HeilSerum Institut" at Frankfurt am Main, Germany.

During her period of working, Ehrlich, with Hata, a Japanese bacteriologist, produced the famous preparation "Salvarsan" or "606." Many incidents leading to this discovery and preparation are narrated in this book. All in all, it gives a faithful picture of the manner of life and work of a really great man in medicine.

Paul Ehrlich should be remembered not only for the discovery of Salvarsan but for many of his original ideas in primary chemistry of blood staining. His line of thought was essentially on chemical lines. She gives some details, too, on his famous "side-chain" theory of immunity, which was an ingenious explanation of many of the phenomena of immunologic response.

I was well acquainted with Ehrlich; in fact, visited him several times at his Institute in Frankfurt and had an opportunity to see personally the workings of the Institute. I also had occasion to become acquainted with Weigert, who is contemporaneous with Ehrlich. Both were quite original individuals who contributed much to the development of scientific medicine.

It is a privilege indeed to read the book and to learn some of the things which occupied the attention of this great man. It is interesting, too, to recall that on a transatlantic liner, I once met the daughter of Paul Ehrlich. She was married to Professor Edward Landau, a famous mathematician of the University of Göttingen, Germany. I had ample opportunity on this cruise to hear from Ehrlich's daughter many incidents of his life which are most interesting and informative.

The book should be read by physicians who are interested in the history of medicine and in the narrative of the life of a great man. R. B. H. G.

Diagnostic Bacteriology, by Isabelle Gilbert Schaub, A. D. Technical Director, Clinical Bacteriology Laboratories, The Johns Hopkins Hospital; Instructor in Bacteriology, The Johns Hopkins University School of Medicine and the Nurses Training Schools the John Hopkins Hospital and Sinai Hospital and M. Kathleen Foley, M. A. Instructor in Bacteriology, Department of Biological Sciences, College of Notre Dame of Maryland; Formerly Bacteriologist in Charge of the Diagnostic Bacteriological Laboratory of the Medical Clinic, The Johns Hopkins Hospital. Fourth Edition. Published by The C. V. Mosby Co., St. Louis, 1952. Price $4.50.

The new fourth edition of "Diagnostic Bacteriology" by Schaub and Foley is completely revised and parts are completely rewritten. The book is divided into five parts.

The first part deals with the standard methods in bacteriology. New additions in this first part consist of new methods of preparation of culture media used in standard laboratory bacteriology.

Part two deals with procedures for the cultivation of pathogenic bacteria from clinical and necropsy material. All of the organisms in the realm of bacteriology are covered. However, I could find nothing said about bacillus anthracis which occasionally comes up in suspected cases of persons working in the meat packing industry and cattle.

Part three deals with the sensitivity of bacteria to antibiotics. Both methods, the serial dilution method and the paper disk method, are well explained.

Part four deals with the serologic identification of organisms and the preparation of agglutination tests on patients' sera. Aside from the usual bacteriologic agglutination tests other agglutination tests used in the diagnosis of atypical pneumonia, tuberculosis and infectious mononucleosis are well explained.

The fifth section deals with the media, staining methods and tests used in the laboratory.

The book is brought up to date and it should fill

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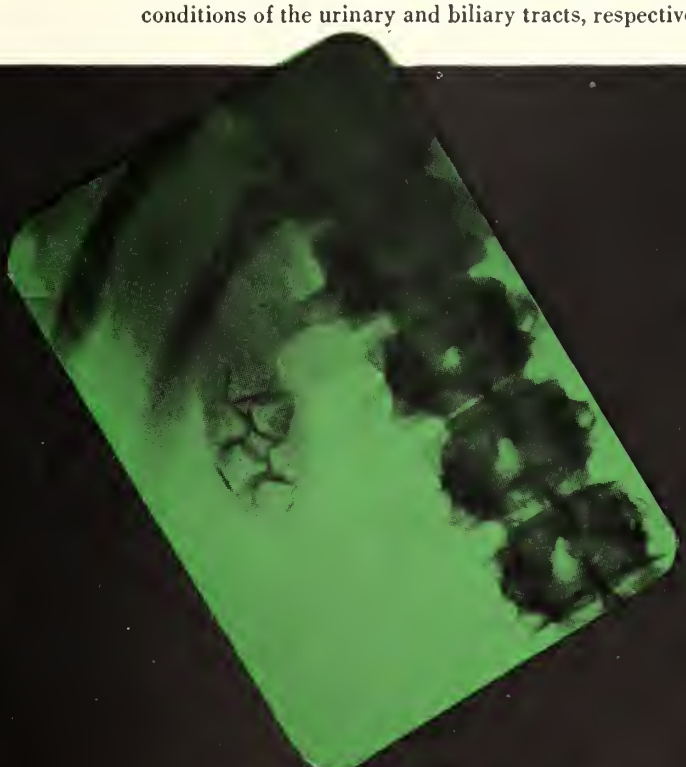
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Electrocardiography, Fundamentals and Clinical Application, by Louis Wolff, M.D., Visiting Physician, Consultant in Cardiology and Chief of the Electrocardiographic Laboratory, Beth Israel Hospital; Associate in Medicine, Harvard Medical School. Illustrated. W. B. Saunders Company. Philadelphia and London. 1950. Price $4.50.

In view of the recent widespread acceptance of unipolar leads, Dr. Wolff's book fills a definite need in that it is an excellent introduction to these newer technics in clinical electrocardiography. For the beginner it supplies a manual which emphasizes basic principles rather than mere memorization of patterns. The author has been teaching this subject to students for a number of years and using this experience, he has written a concise and lucid text which admirably covers all the fundamental concepts in the field.

The book is divided into two parts. The first section covers basic principles and the second deals with clinical applications. It does fall short of being a complete text of electrocardiography in that there is no discussion of the arrhythmias. Moreover, technical information such as descriptions of instruments and technics of taking good tracings are not included. As the author states, however, this omitted material is available elsewhere. His purpose in writing this book has been to present a relatively simple explanation of the electrical phenomena associated with muscle contraction and their application to clinical electrocardiography. In this he has succeeded well.

A few of the concepts presented by the author may perhaps be questioned and debated by other authorities in the field, but considering the limited scope of the book, one cannot consider these differences in opinion as important. For the beginner, it can be highly recommended. S. E. S.

From the Hills, An Autobiography of a Pediatrician, by John Zahorsky, M.D. C. V. Mosby Company. St. Louis. 1949. Price $4.00.

The autobiography "From the Hills" should be of particular interest to Missourians since its author, John Zahorsky, whom one of my pediatrician friends discribes as "the daddy of pediatricians in St. Louis," is almost a pure Missouri product.

The book is divided into three parts of, roughly, thirty years each: Development, Maturity, and Decline. The first of these ends at approximately the end of his formal education. Highlights of this include his transplantation from Mereny, Hungary, to the Ozark county by way of Cleveland, Ohio, in early childhood; his recollections of the one room Pleasant Valley School; the Steelville Normal and Business Institute; life and study at the Missouri Medical College, where the diplomas were handed out by the janitor; early attempts to establish practice; and his initial appointment to Bethesda Hospital and Foundling home.

The section on Maturity deals with the years of active practice. In one place in this he describes how his first case of roseola infantum (Zahorsky's disease) was pooh-poohed as "teething fever," until the baby broke out in a beautiful rash. It was not until the same clinical picture was reported from all parts of the world that the disease was recognized as an entity, and Dr. Zahorsky was recognized as an authority on it. The section on Decline covers the eighteen years from the age of 60 to the present. With the retirement from active practice, there is more time for poetry, philosophy and country life.

Included in the book are three character sketches of men who particularly influenced the author: R. E. Lee Gibson, the Ozark Poet, Professor J. B. Hayes, and Dr. E. W. Saunders. There are also several essay-like chapters on semi-medical or philosophic subjects, written prior to the composition of the rest of the book. M.H.

Principles of General Psychopathology, An Interpretation of the Theoretical Foundations of Psychopathological Concepts, by Siegfried Fischer, M.D., Clinical Instructor in Psychiatry, University of California; Formerly Professor of Psychiatry and Neurology, University of Breslau. 1950. Philosophical Library, New York. Price $4.75.

Possibly the title might be a little misleading, in that usually before each chapter there is a synopsis of psychology bearing on the topic. This is followed by the abnormal changes or pathologic states. Amnesia of various degrees is discussed. Likewise the various degrees of consciousness are considered and evaluated. Some peculiar assumptions might be questioned. Foreign words are used quite frequently and especially Germanic. For instance, the French word "Deja Vu," is defined; but the definition might be inadequate for the average worker.

When he discusses consciousness he refers to the various degrees. These run from a clouded mind to complete somnolence and coma. Hypnosis is also given due attention. The author's treatment of emotions, both normal and pathologic might be interpreted by the average reader as somewhat vague. Fantasies, delusions and hallucinations are handled well. Toward the end of the book in Part 3, various syndromes are discussed. The author would like to draw a sharp line between a syndrome and a disease entity. This might not be appreciated by the French as many of them consider some syndromes as a disease. In one of the last chapters personality, character and temperament are given due attention. The various types of personality are enumerated. Then personality with deviations in the neuroses and psychoses are discussed freely.

The average doctor or individual interested in psychiatry or psychology might profitably invest in this concise, small book. A. L. S.

Prescription for Medical Writing, by Jordan, Edwin P., M.D. Printed by W. B. Saunders. $2.50.

This book represents the gradual development of a medical article based in great part upon suggestions submitted by the authors. It is written by Edwin P. Jordan, M.D., who is responsible for the chapters on medical writing and statistics, and Willard C. Shepard, for the chapter on illustrations. Its purpose is to serve as a useful guide to principles and practice of effective scientific writings and illustrations.

One cannot obtain the full value of this book by merely reviewing it. Repeated references as one writes

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After standard exercise, approximately 10 per cent of patients with angina pectoris and a normal resting electrocardiogram, show evidence of coronary insufficiency; if the amount of exercise be doubled, 33 per cent will show a positive test. In the group with angina and an abnormal resting gram, 50 per cent show changes after exercise, increasing to 66 per cent if the exercise is doubled.

Patients with neurocirculatory asthenia or valvular heart disease frequently show an exercise tracing positive for coronary insufficiency. Sodeman, Wm. A., Pathologic Physiology: Mechanisms of Disease, W. B. Saunders & Co., 1950, p. 188-189.

Pathologically Speaking

MASTER'S TWO-STEP TEST

WHEN the physician is confronted by the patient in whom precordial pain is a symptom, his ensuing cardiac examination almost always includes an electrocardiogram. Frequently, such a tracing will show no abnormality, despite the fact that the description of the pain, as given by the patient, is typically that of angina of effort or exertion, relieved by rest.

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Comparisons are made between the standard three electrocardiographic leads and usually the precordial lead over the apex of the heart, as taken before and then following the measured amount of exercise. The criteria of coronary disease are taken to be:

(1) Significant (0.5 mm. or more) depression of the S-T segment in any lead;

(2) Alteration of a positive T wave to a flat, diphasic or negative T wave in any lead (unless it occurs in standard lead III only);

(3) Alteration from a negative to a positive T wave in any lead;

(4) Occurrence of multiple premature beats or any significant arrhythmia;

(5) Prolongation of the P-R interval and/or heart block;

(6) Widening of the QRS complex;

(7) Appearance of deep Q waves.

If any or a combination of these phenomena occurs, an impression of coronary insufficiency is justified, and the patient may be treated accordingly with an eye to the prevention of myocardial infarction.

RALPH EMERSON DUNCAN, M. D.
LORAINE E. SCHULTZ, M. D.
ALBERT E. UPSHER, M. D.

an article will offer additional helpful hints that are not usually seen beforehand. C. D. E.

A Sex Guide to Happy Marriage, by Edward F. Griffith, M.R.C.S., L.R.C.P. Introduction by Robert Latou Dickinson, M.D. Emerson Books, Inc., New York. 1952. $3.00.

This guide discusses most thoroughly the requirements for happy marriage today. There is perhaps a little too much discussion of the sex act itself and too little of the emotional attitudes found during courtship and marriage. It includes a quite complete list of family counseling, marriage counseling and planned parenthood clinic services. In view of the frankness found in other chapters the discussion of contraceptives seems evasive in referring to "barrier devices" rather than the medically correct terms.

M. E. M.

Integrated Practice of Medicine, Progress Volume, Modern Developments in Therapeutics and Methods of Treatment, by Harold Thomas Hyman, M.D. W. B. Saunders Company. Philadelphia and London. 1950. Price $10.00.

It seems but a short time since "An Integrated Practice of Medicine" appeared, and it is instructive to read of the advancement of medicine in this new "Progress Volume." In fact, a great deal of progress has been made. The antihistamines, ACTH and Cortisone are entirely new, and much progress has been made in the antibiotics, Aureomycin, Chloromycetin and Terramycin in particular.

The author's introduction deserves special mention, and especially the concept of the tuberculin-type allergy that may result from the sulfonamide drugs. Practitioners at large are generally unaware of this danger and one might differ with the author as to its importance in point of frequency.

The material of the book is arranged alphabetically from "Actinomycosis" to "Yellow Fever" not omitting "Xiphosternal Crunch."

A complete index of the first four volumes, as well as this "Volume Five" is included.

This is an excellent "Progress Volume" in keeping with the high standard of the original. B. S. P.

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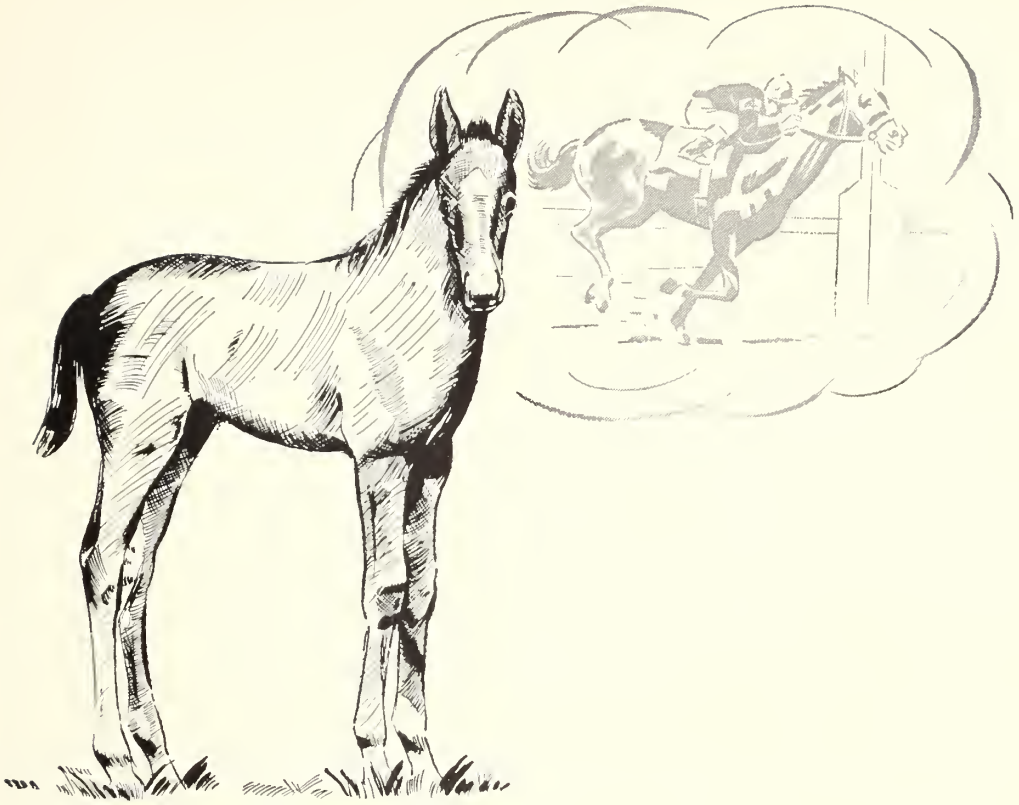
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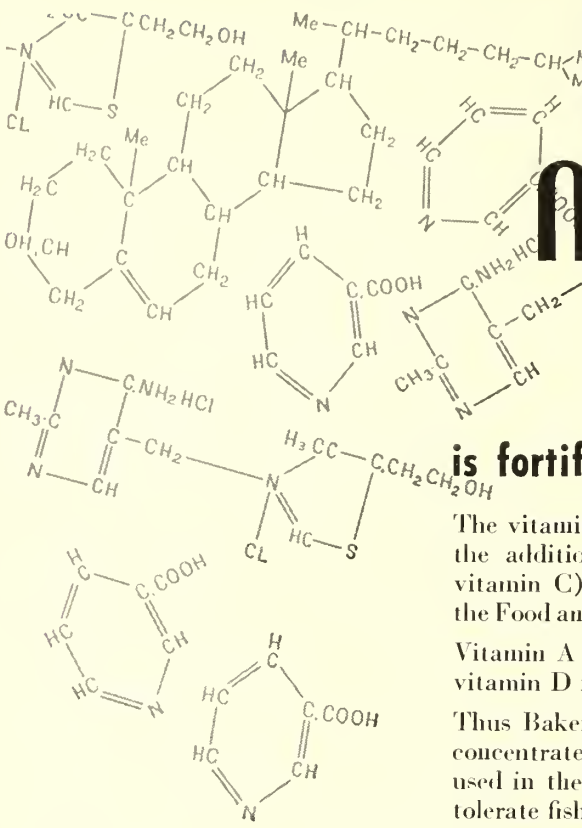
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I don't know if Miss Gilbert, the principal, actually wrote those cards, but she took full responsibility. This morning she got up in the Assembly Hall — before the students — and started writing GRAMMAR with two "a's" on the blackboard 100 times!

From where I sit, I'll bet this makes her even more popular with the students. It's nice to see an expert admit she can make a mistake. Too many so-called "experts" claim they're never wrong on such subjects as what you or I ought to eat . . . how we should practice our profession . . . whether we should enjoy beer or buttermilk. A really wise person never claims to "know all the answers."

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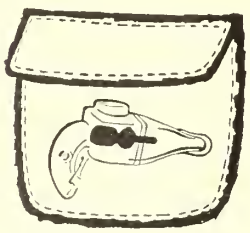
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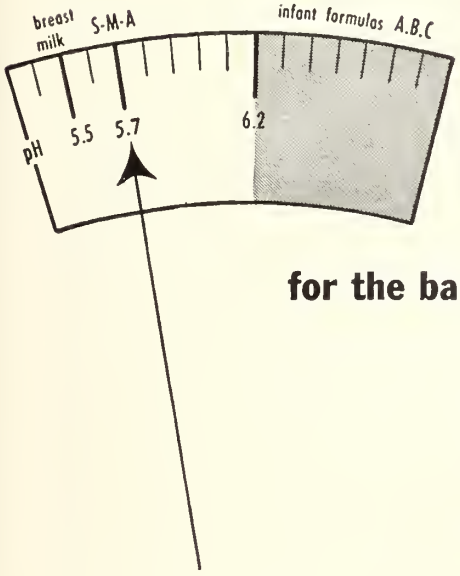
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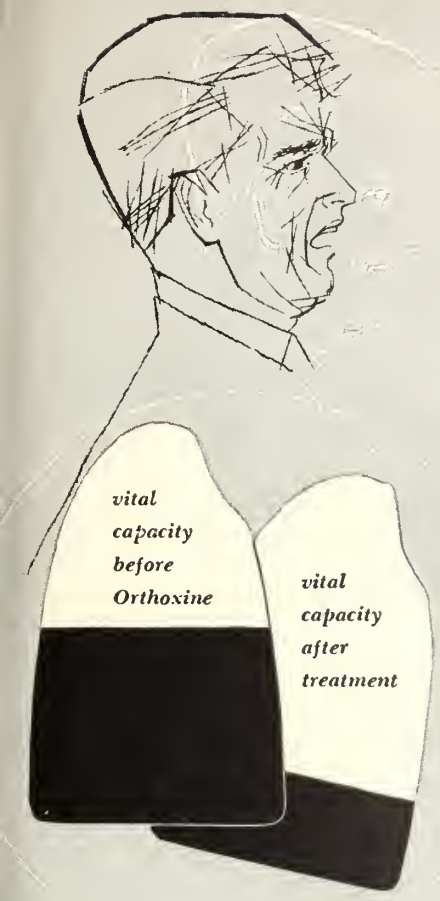
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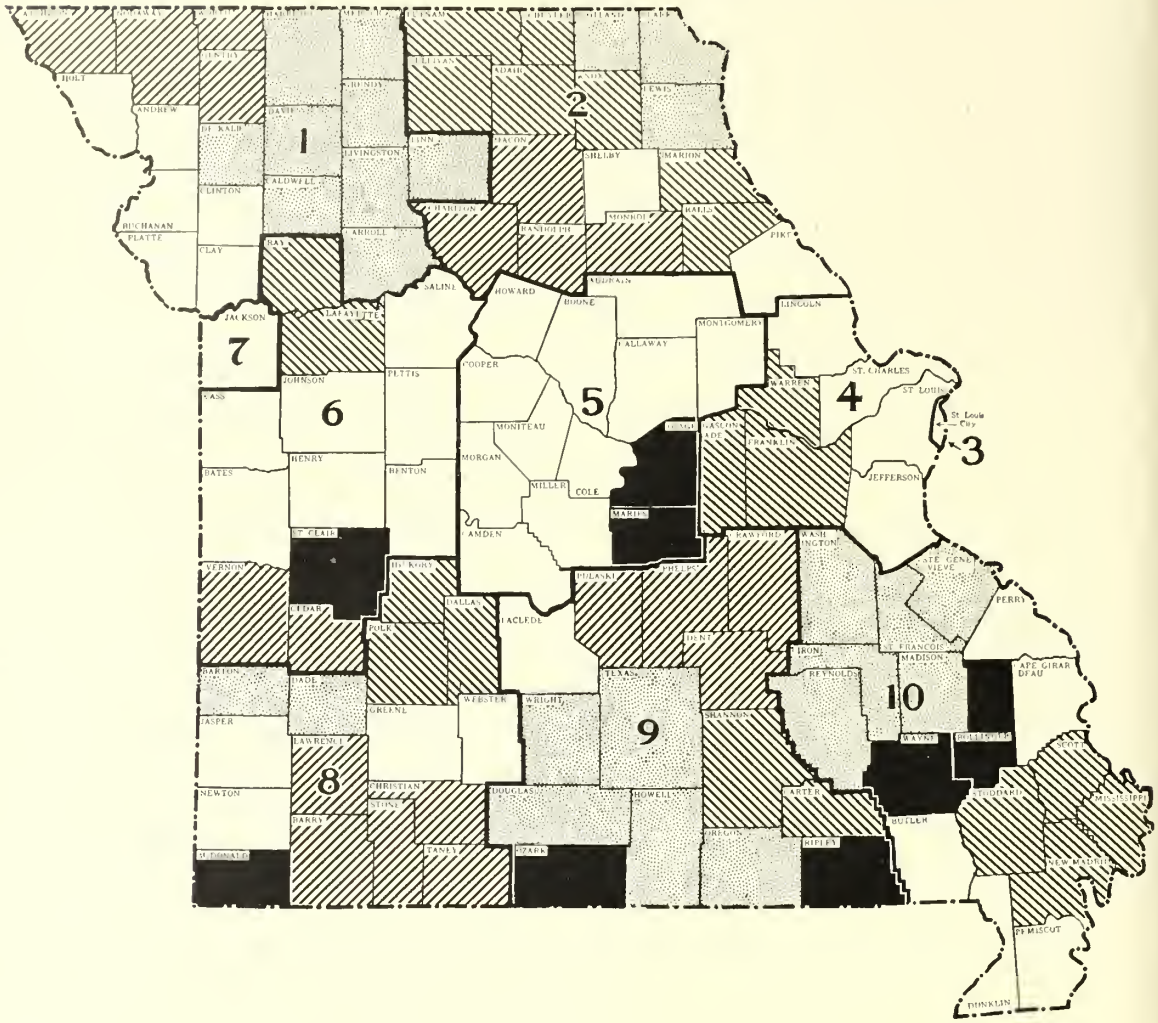
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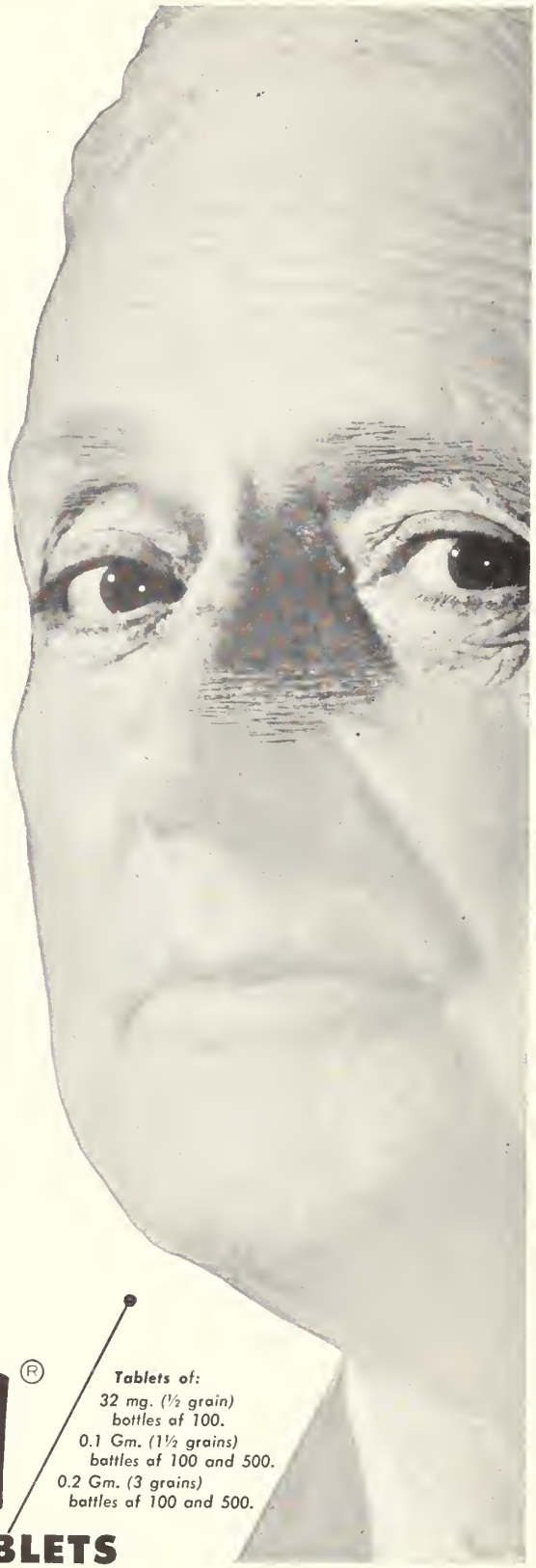
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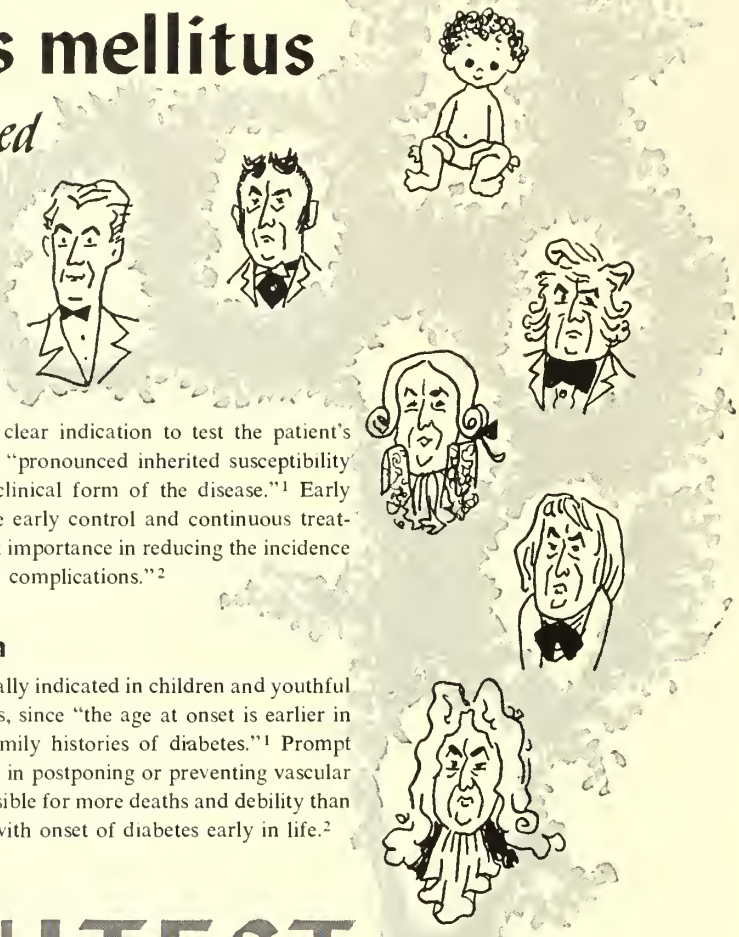
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1. Watson, E. M., and Thompson, M. W.: Am. J. Digest. Dis. *18*:326, 1951.

2. Wilson, J. L.; Root, H. F., and Marble, A.: J.A.M.A. *147*:1526 (Dec. 15) 1951.

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McHardy, G. G. et al, Clinical Evaluation of Methantheline (Banthine) Bromide in Gastroenterology, J.A.M.A. Vol. 147, no. 17, Dec. 22, 1951, pp. 162 ff.

Pathologically Speaking

VALUE OF GASTRIC ANALYSIS

IN patients presenting vague complaints of belching, gaseousness, epigastric discomfort before or after meals, obscure anemias or weight loss, or in patients presenting more definite symptoms such as actual epigastric pain especially when hungry or during the night, diarrhea, or constipation, the analysis of gastric volume and acidity may be of great diagnostic assistance.

It is a somewhat confusing fact that most of the above symptoms (with the exception of true epigastric pain) may occur in the presence of either insufficient or excess acidity and/or volume of gastric juice, and it becomes immediately apparent that one cannot hope to institute the proper therapy until the *status quo* is first determined.

To obtain the most information, one should perform an analysis on the morning fasting contents of the stomach and then administer a so-called "test meal." The old Ewald breakfast of bread and water is now largely replaced by the alcohol meal or the histamine test; in the former, the patient is given 50 cc. of 7% alcohol via the gastric tube directly into the stomach, and in the latter a subcutaneous injection of 1.0 cc. of histamine diphosphate (containing 0.275 mgm. histamine base) is given. One of the outstanding advantages of the latter two methods lies in the fact that only one intubation of the patient is necessary since the tube remains in the stomach all during the test, being clamped off between the aspiration periods.

Should one obtain a fasting specimen of over 100 cc., pyloric obstruction due to ulcer or carcinoma of the stomach or due to extrinsic pressure must be searched for diligently. Should a volume of less than 20 cc. be obtained, one must suspect pernicious anemia, chronic alcoholism, leather-bottle stomach, chronic gastritis, or extrinsic pressure.

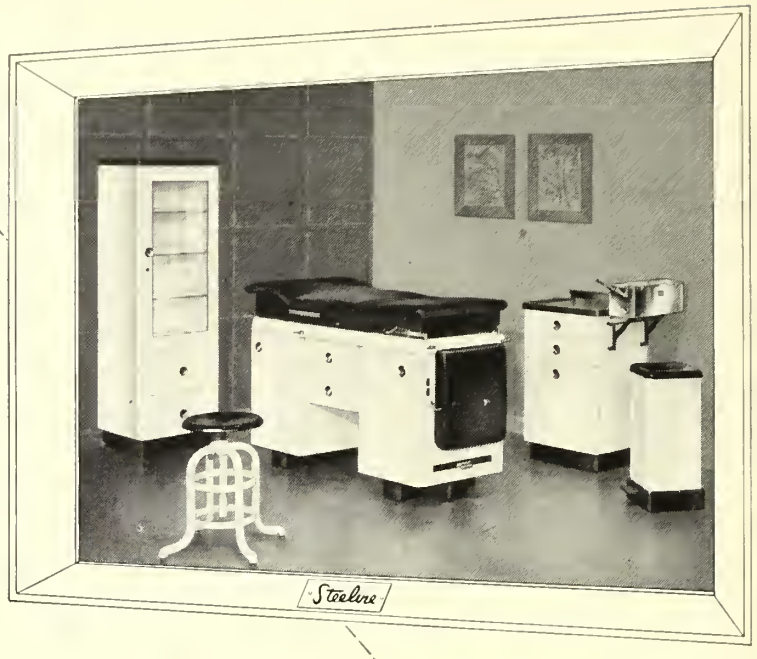
As to acidity, one must remember that approximately 10% of all adults and as many as 30% of adults over 70 years of age show achlorhydria *in the absence of disease*. But one must always rule out pernicious anemia, gastric carcinoma, chronic gastritis, and pellagra if achlorhydria be present, especially if it persists after alcohol or histamine stimulation.

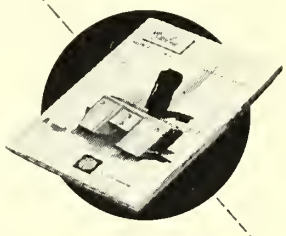
If hypochlorhydria is present along with diarrhea, sometimes the administration of hydrochloric acid with meals will alleviate the diarrhea; on the other hand, if hypochlorhydria be present with constipation, the same therapy may rectify this condition. In other individuals, hyperacidity may be a factor in diarrhea, and here the administration of an alkali may be the necessary corrective measure.

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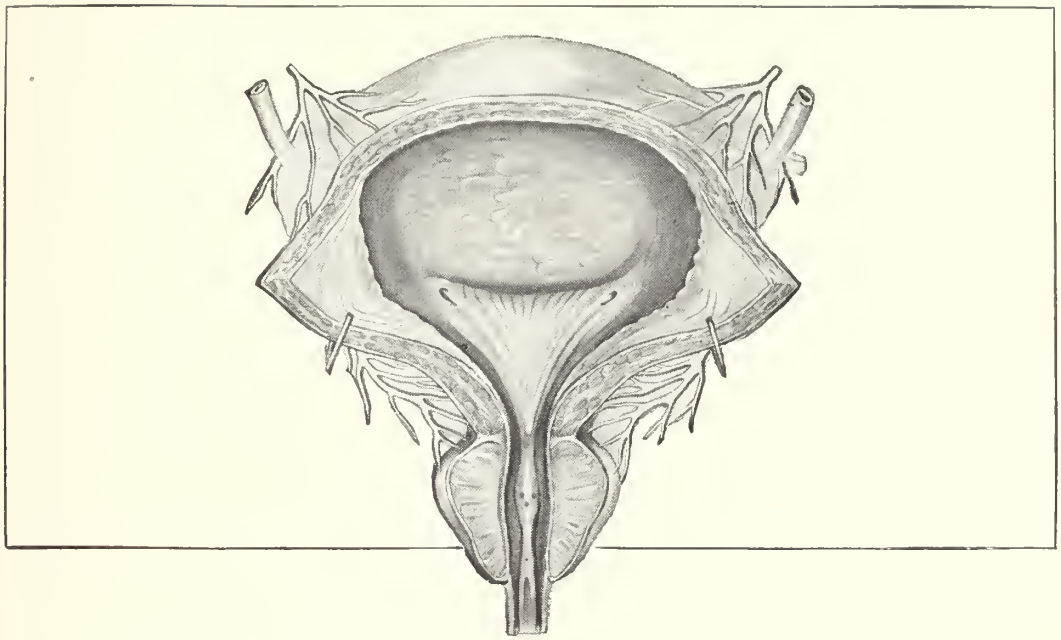
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Volume 49 November, 1952 Number 11

Scientific Articles

HEPATITIS

DIFFERENTIAL DIAGNOSIS BY LABORATORY STUDIES

HANS POPPER, M.D.
CHICAGO

In the past decades the pathologist has been charged with the responsibility of demonstrating the presence of damage to the liver by the methods at his command in order to support the clinician in the diagnosis and therapy of patients with jaundice. Originally, the damage to the liver was demonstrated in the laboratory by biochemical and serologic methods. Some of these methods, pitifully few, test functions which only the liver can perform and are therefore true liver function tests. An example is the ability of the liver to form prothrombin in the presence of vitamin K. Others test functions which the liver shares with other organs, particularly the kidney. The great majority of the procedures, however, are not actual function tests but give circumstantial evidence about the activities of the liver which may become diagnostic if various other factors potentially producing abnormal findings are taken into account. Into this third group of hepatic tests fall most of the procedures applied today in the laboratory.[1] The best examples are the flocculation tests.

In recent years, the microscopic study of liver biopsy specimens, mainly obtained by needle, has been added to these clinical pathologic procedures and at present attempts are under way to bring the results of functional and histologic methods into a practical system. However, despite diligent work by clinicians and laboratory workers toward the practical application of these methods at the bedside, their use is still almost as confusing or even more so than twenty years ago. One of the main difficulties is the fact that demonstration of hepatic damage as such by laboratory methods solves not necessarily the diagnostic difficulties encountered as, e.g., quite often the demonstration of renal damage does.

The term "hepatitis" indicates an inflammation of the liver. However, when dealing with a primary epithelial organ, the inflammatory alteration is of less importance than the degeneration of the epithelial cells, which in itself almost invariably elicits some inflammatory reaction. In this sense, for the clinician hepatitis means almost any diffuse hepatic injury of clinical significance, usually with jaundice, not necessarily emphasizing the inflammation. The mere demonstration of the presence of hepatitis, therefore, as a hepatic injury, does not solve the two most important clinical questions, especially in the jaundiced patient: (a) the problem of etiology of the hepatitis, mainly the differentiation between a "surgical" jaundice due to a stone, tumor or stricture from a "medical" jaundice due to primary hepatitis or cirrhosis; (b) the problem of prognosis, which means the recognition of the presence of a cirrhosis or the tendency for a transition into this irreparable stage. For the solution of these problems, clinical observation and history will still remain the most reliable criteria. In the following the attempt will be made to describe the assistance which the laboratory may offer. In practice, the emphasis lies upon the functional methods and liver biopsy will only be applied if the other methods have been exhausted. In general, liver biopsy has been to date of greater assistance in the basic comprehension of hepatitis than in its differential diagnosis. In this discussion histologic findings are described primarily for better understanding, and special emphasis will be made whenever they become of clinical differential diagnostic significance.[2]

In general, even the combined use of functional and histologic methods only exceptionally will uncover the diagnosis of the disease, but they will enable one to recognize the presence or absence of certain phenomena. I would like to discuss four of these phenomena.

1. *Liver cell degeneration.*—Histologically, the presence of liver cell degeneration is recognized readily by variations in staining qualities of

From the Hektoen Institute for Medical Research of the Cook County Hospital and the Departments of Pathology of the Cook County Hospital and Northwestern University.

Presented at the 94th Annual Session of the Missouri State Medical Association, March 30-April 2, 1952, St. Louis.

nucleus and cytoplasm. When extreme, the liver cells become necrotic or disappear.[3] As a rule, liver biopsy specimens are representative of the state of the liver as far as diffuse liver cell degeneration is concerned.[4] Liver cell degeneration runs parallel with abnormalities in hepatic tests, specifically those which entail (a) faulty formation of serum protein components formed by the liver cells resulting, for instance, in a decreased serum albumin level, an abnormal cephalin flocculation[5] and thymol turbidity[6] (due to reduced serum albumin and alpha globulin and to a lesser degree due to an increase in gamma globulin), reduced serum cholinesterase and reduced serum prothrombin despite vitamin K therapy; (b) reduced metabolic function of the liver cells exemplified by low cholesterol esters due to faulty esterification by the liver and (c) abnormal clearance of pigments by the liver cells from the blood as exemplified by retention of injected bromsulphalein (diagnostic only in the absence of jaundice) or of increased urinary excretion of urobilinogen. This list, which includes the tests commonly used, may be prolonged at will. Abnormal results in one test do not necessarily establish the presence of diffuse liver cell degeneration since, unfortunately, false positive tests are not uncommon.[1]

2. *Cholestasis.*—This describes the phenomenon of interruption of the bile flow either by mechanical means (usually due to extrahepatic factors such as tumors or stones) or by functional disturbances (usually due to alteration within the liver itself). Histologically, the phenomenon of cholestasis is characterized by the presence of bile pigment in the Kupffer cells, in the liver cells and, particularly, in the dilated bile capillaries which may contain ramified bile plugs. Associated with this picture there are characteristic functional changes. There is an excess of bile pigment in the serum (reflected in the jaundice) as well as in the urine. In addition, serum alkaline phosphatase is elevated either due to faulty excretion into the bile with subsequent retention in the blood or, as it appears more probable, due to an excessive formation in the liver under the influence of cholestasis. Elevation of total serum cholesterol and serum phospholipids are probably due more to excessive formation than to regurgitation as one has previously assumed. If the cholestasis is complete and no bile reaches the intestine there is not only absence of bile from the feces but also of intestinally formed urobilinogen from the urine. A peculiar result of cholestasis is the excess in the serum of a chemically unidentified factor which depresses protein precipitation and which thus causes the flocculation tests to be normal even in the presence of liver cell damage.[7]

3. *Inflammation.*—Some degree of inflammatory reaction is characteristic of any type of liver degeneration, probably because the breakdown of liver cells acts as a stimulant. The Kupffer cells are enlarged and exudate cells are in the portal triads. The proliferated Kupffer cells and possibly also the cells of the portal triads produce gamma globulin, increasing its serum level. This, in turn, may be responsible for increased tendency for flocculation in the respective test. This tendency, however, is absent if extensive bile inhibition of these cells, as occurs in severe cholestasis, prevents the excessive gamma globulin production. Elevation of the gamma globulin level is not specific for hepatic inflammation and may be found in many other chronic inflammations.

4 *Cirrhotic transformation.*—Cirrhosis due to different causes has many manifestations as well as sequelae but it may scarcely be recognized by the common hepatic tests. They indicate only the liver damage as part of the cirrhotic picture but do not measure the cirrhotic process as such. Marked elevation of the gamma globulin level as found by turbidity tests[8, 7] may be the only laboratory procedure of assistance to differentiate an acute hepatitis from a cirrhosis, though the nonspecificity of this finding has just been emphasized. For the recognition of cirrhosis, active or inactive, liver biopsy is the most helpful procedure in the nonjaundiced patient and similarly for differentiation from acute hepatitis in the jaundiced patient. Although the degree of scarring may not be uniform through the liver, it will be exceptional if the liver biopsy specimen fails to reveal any scarring in cirrhosis.

The appreciation of some principle phenomena and their characteristic laboratory findings should assist in the discussion of the clinical entities in which hepatitis or hepatic injury is found. Some of these are primary in that the extrahepatic bile ducts are not involved and since, therefore, surgical intervention is contraindicated they may be considered "medical" lesions. The most important, although not necessarily the most common, is due to a specific virus either as infectious or homologous serum hepatitis. Previously its benign variety was called catarrhal jaundice and the fatal one acute yellow atrophy. Histologically, viral hepatitis is characterized by necrosis of isolated liver cells or groups of cells spread irregularly throughout the entire lobule but usually more marked in its center. This necrosis evokes marked inflammatory reaction in the form of round cells around the necrotic and disappearing liver cells and in the portal canals. Complete necrosis of the liver cells may be preceded by an acidophilic degeneration of their cytoplasm so as to produce round, markedly refractile, eosinophilic bodies.[9, 10] They are sometimes called Councilman bodies because of some similarity to those which Councilman described in yellow fever. In relatively few instances all liver cells in one lobule become simultaneously necrotic. If this occurs in all or almost all lobules of the liver, the patient dies in a matter of days with the picture of fulminant

hepatitis.[11] If gradually one nodule after the other is destroyed, the patient will die after a slightly protracted illness, still with the picture of acute atrophy.

The fully developed stage of viral hepatitis presents a fairly characteristic histologic picture. However, as a rule, biopsy is not necessary for diagnosis. The hepatic tests reveal evidence of more or less severe liver cell degeneration with some signs of cholestasis and usually with a moderate inflammatory gamma globulin elevation. A grave prognosis is not necessarily reflected in the outcome of the usual tests. Marked drop of the cholesterol esters probably is the most significant of the tests listed.

In contrast to the fully developed picture of viral hepatitis with jaundice, the other forms of this disease present a greater challenge to the clinician and pathologist. This includes the preicteric stage, in which urinary bilirubin excretion and abnormalities in some hepatic tests may give diagnostic help. Only gradually did awareness come of the nonicteric viral hepatitis when during hepatitis epidemics noncharacteristic illnesses were encountered accompanied by abnormal hepatic tests and especially a characteristic biopsy picture.[12, 13] Outside of epidemics, the recognition of nonicteric hepatitis by hepatic tests is difficult. It would be possible by liver biopsy[10] but probably specific virus tests will have to be developed to delineate clearly nonicteric viral hepatitis.

The recognition of the sequelae of the acute stage is also a thorny problem. Following massive necrosis of lobules the connective tissue frame may collapse resulting in larger or smaller scars scattered throughout the liver. Such a post-hepatitis cirrhosis may be characterized by persistent illness with jaundice and laboratory evidence of liver cell degeneration, inflammation and cholestasis. Far more challenging to the diagnostic acumen is the insidious development of this process without jaundice. Malaise and fat intolerance may be the only clinical symptoms until the full picture of cirrhosis is present. The laboratory findings may reveal elevated serum gamma globulin and abnormal results in other tests without any recognized specificity and liver biopsy may be the only procedure which can solve the case.

Chemical poisons such as carbon tetrachloride, bacterial poisons, (e.g., from pneumococci or dysentery bacilli) or endogenous injurious substances (e.g. in hyperthyroidism, pregnancy, or infarcts) produce hepatic damage, commonly called toxic hepatitis.[14] Often the responsible agent cannot be demonstrated. Histologically, the picture is usually quite different from viral hepatitis in that the polymorphism, so characteristic for the latter, is missing and the inflammatory reaction is less violent. Liver cells become uniformly necrotic in the same lobular zone, almost always in the center. The picture in the autopsy specimen is quite typical, but not in the biopsy specimen because the severe changes develop only if the patient is too sick to be subjected to biopsy; only some pericholangiolar exudate may be present. Fat may be found profusely in some of the cases. The laboratory findings are, in general, those of liver cell degeneration with or without cholestasis. As a rule, the inflammatory component is in the background and gamma globulin and flocculation tests are normal in about 30 per cent. The differentiation of this group from the surgical types of hepatic injury by biopsy is difficult, but by laboratory findings is usually possible.

The fatty liver resulting from deficiency of necessary nutrients (especially proteins) as seen in this country mainly as a result of alcoholism, may progress into cirrhosis if liver cell degeneration or inflammation appear as they commonly do because of the reduced functional reserve. This cirrhosis formation, at least in later stages, is not necessarily associated with fat accumulation. If the complicating liver cell degeneration is absent at the time of examination, the laboratory findings may reveal only elevation of gamma globulin with otherwise normal or almost normal hepatic tests. In contrast, in the active stage all findings of an acute hepatitis, including hepatic cell degeneration and cholestasis, may be encountered. Therefore, for the differentiation of the active lesion from other types of acute hepatitis or for the recognition of the inactive lesion, liver biopsy is almost the only reliable laboratory procedure.

The types of hepatitis demonstrated so far are all due to primary diseases of the liver without involvement of the biliary tract and were termed "medical." In contrast, in the "surgical" type the liver is involved secondarily due to an obstructive process in the extrahepatic biliary tract. This obstruction may be due to tumor (in which case it is usually progressive or complete) or due to a stone or stricture (when it is incomplete). Biliary retention produces liver cell damage which clinically may present the picture of a biliary hepatitis and sometimes only the use of all laboratory procedures available will provide the answer to an urgent diagnostic problem; namely, whether to operate or not. Histologically, there is usually increased portal cellularity. The liver cell damage is localized mainly in the centrolobular portion and does not differ significantly from toxic hepatitis. Only severe bile stasis, out of proportion to the liver cell degeneration or a relatively slight degree of the latter for the duration of the disease, suggests the etiology. The outstanding finding is the dilatation of the bile ducts in the portal triads. With prolonged obstruction, extravasation of bile with characteristic foreign body reaction may take place. Also necrosis of the lobular periphery may result

from vascular interference: bile infarct.[15] Whereas, thus, the earlier stages are morphologically nonspecific, the later are characteristic.

In contrast, the hepatic tests are much more specific in the earlier stages. With the findings of cholestasis and more or less severe liver cell degeneration, the flocculation tests are normal due to lack of elevation of gamma globulin and due to the depression factor so characteristic of biliary obstruction. Normal flocculation tests with high alkaline phosphatase with or without evidence of liver cell degeneration are thus almost characteristic for an extrahepatic biliary obstruction. However, several important exceptions to this rule exist.[16] In prolonged obstructions with complicating cirrhosis formation the flocculation tests become abnormal. Similarly, a complicating bacterial infection of the liver[14] (e.g., from suppurative cholecystitis or cholangitis, particularly in the presence of diabetes) may increase gamma globulin production outside of the Kupffer cells and also render the flocculation tests abnormal. Thus, in the surgical types of hepatitis, the negative flocculation tests are of main diagnostic significance with the exception of long standing obstruction or suppurative infection. The liver biopsy is, in general, of limited value except that it occasionally may reveal an unexpected carcinoma. It may, however, be the only laboratory means of differentiating surgical jaundice from cholestasis without liver cell degeneration not caused by extrahepatic biliary obstruction, sometimes referred to as "cholangiolitic" hepatitis.[17] This medical lesion gives all the laboratory findings of a surgical condition and is thus the most difficult laboratory problem in the differential diagnosis of jaundice. Its etiology is, in most instances, unknown. Some cases are apparently viral, others are of toxic (arsenic) origin. The elevation of the serum cholesterol is sometimes so marked as to lead to the deposition of lipids in the skin with xanthoma formation so that the disease seems to deserve the name of xanthomatous biliary cirrhosis. Surgical exploration may be necessary to differentiate these cases from protracted, usually incomplete, extrahepatic biliary obstruction. Liver biopsy may be helpful in some cases. Bile stasis not only in the lobular parenchyma, but also in the bile ducts in the portal triads, and especially bile extravasion in this location suggest an extrahepatic biliary obstruction although their absence does not exclude it.

SUMMARY

In conclusion, the various forms of hepatitis were discussed as composed of different individual phenomena with characteristic functional and biopsy findings. Although for the solution of most bedside problems clinical observation sometimes supported by the ultimate help of surgical exploration is the most commonly used approach, the laboratory offers important ancillary procedures. Of these, the biochemical and serologic hepatic tests suffice in most instances but, on selected occasions, liver biopsy may offer the only reliable answer.

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DERMATOLOGIC MANIFESTATIONS OF HYPOPROTEINEMIA

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During the last few years studies of the plasma proteins in cutaneous disease have been made with increasing interest and some definite relationships have been noted. In beginning, it might be well to give the normal values for the plasma proteins. According to Peters and Eisenman,[1] the normal range of total protein is from 6.0 to 8.0 gm. per hundred cubic centimeters, for albumin 4.0 to 5.5 gm. per hundred cubic centimeters and for globulin 1.4 to 3.0 gm. per hundred cubic centimeters. The other two plasma proteins, fibrinogen and prothrombin, have levels that are negligible and have no bearing from a metabolic or nutritional standpoint. The normal

Presented at the 94th Annual Session of the Missouri State Medical Association, March 30-April 2, 1952, St. Louis.

albumin-globulin ratio should be at least 1.5:1.0. While alterations in this ratio are significant, the actual concentrations of plasma albumin and plasma globulin are much more important. According to Elman,[2] the albumin fraction, due to its greater concentration, contributes about 85 per cent of the colloidal osmotic pressure of the blood but, because of its smaller molecular weight, it fluctuates most significantly in conditions which involve protein deficiencies. Strictly speaking, deficiencies in the plasma proteins should be called "hypoalbuminemia" rather than the more general term "hypoproteinemia." I have observed that many cases falling under the category of this paper have total plasma proteins within normal limits but the albumin fraction is always below normal, at least to a small extent, while the globulin fraction may be in the limits of the normal range or definitely elevated. Less frequently the total protein value is below normal limits. This reduction is due also to a deficiency of the albumin fraction.

In 1942 Mulvehill[3] made the first extensive study of plasma proteins in skin diseases. He selected eleven common dermatoses often requiring hospitalization, but he found that only in pemphigus was the plasma protein, in general, abnormal. In this disease hypoproteinemia was the rule, due in all instances to a hypoalbuminemia.

In 1948 Guy, Jacob and Guy[4] published a report on geriatric nutritional eczema in which they stated that protein deficiency in older people's diet, proved by low total plasma protein and alteration in the albumin-globulin ratio, could produce eczematous processes of varying degrees in the skin. Since the legs were the most frequently involved areas of the body, and since edema of varying degrees was always present, hemostasis due to cardiac or renal disease and varicosities had to be ruled out in all cases. As this group of patients had all reached middle life, they tended to eat a diet usually high in carbohydrate and low in protein, which seems to be a natural human tendency, especially when living alone. Also, most of these patients had dental caries or poor masticating surfaces, probably explained by the fact that the majority were living on diets commensurate with a low income. Although the caries might have acted as a contributing focus of infection factor in some patients, the inability to chew properly more difficult foods such as meat was the more plausible reason for the existing hypoproteinemia. Most of these patients, because of their age, revealed a relative or complete achylia, which possibly was a contributing factor in the production of the skin eruption through partial failure of absorption of the food ingested. They also mentioned impaired hepatic function as an additional factor although no such laboratory studies were made.

A short time previously, in 1948, Eichenlaub and Osbourn[5] reported on eight cases of congestive eczema which was primarily due in all instances to impairment of liver function as determined by the sulfo-bromophthalein dye test, and the blood total protein and albumin-globulin ratio. While most of these patients had dermatitis on the legs, involvement of other portions of the body, especially the hands, was present in four of these cases. No details of the eczematous processes were described, however.

My attention was first focused on dermatitis due to mild hypoproteinemia in February 1950. An elderly male was observed for a chronic, rather severe eczematized area over the lower half of the left leg. After ruling out varicosities, cardiac and renal disease, a plasma protein determination was made. Although the total was just above the lower limits of normal, the albumin fraction was slightly low. He was then placed on additional protein orally and the dermatitis cleared within two weeks. The same local therapy of bedrest and wet compresses was continued, whereas previously it had been entirely ineffective for four weeks. Since then, from my observations, I have noted that although the majority of chronic dermatoses due to hypoproteinemia fall in the age group beyond 60, this is not always the case, and it may include young adults. These eruptions have been noted most frequently in females.

Clinically, the lesions are usually bilaterally symmetrical, but at times may be unilateral. The areas most commonly affected are the legs and the feet, but occasionally only the arms or the hands are involved and, in severe cases, the entire body. The lesions are generally exudative, but sometimes are dry and crusted or scaly. The legs may be definitely edematous, but many of the cases are borderline deficiencies in the albumin fraction of the plasma total proteins and therefore give slight evidence of edema. The edema may shift to the hands or face during recumbency. The skin lesions are practically always sharply marginated and have a dusky reddish color. I have noted in most of the cases in which there is involvement of the feet and hands or the hands that only the dorsal surfaces are involved, and the redness stops abruptly midway along the sides of the hands, fingers and feet. Generally, the sides of the toes are not involved and usually only the proximal one third of the dorsal surfaces of the toes or not at all. Rarely does the erythema extend above the knees, although if the forearm is involved there may be extension upward beyond the elbow. The palms and soles are nearly always free from eruption and seem rather pale in contract to the sharp line of redness on the sides of the hands and feet. In most cases, rather intense pruritus accompanies the eruption, and this is persistent even though the erythema has subsided greatly with therapy directed toward overcoming this protein deficiency state. Evidence of the pruritus is usually manifested by small

crusted excoriations, but the long linear scratch marks as seen on the back from pediculosis corporis are not observed. Following the excoriations, secondary bacterial infection sometimes complicates the underlying dermatitis. This accompanying condition manifests itself as impetiginous dermatitis or less commonly as folliculitis or ecthyma, or rarely as furunculosis. If the dermatitis is widespread, especially if the protein deficiency is marked or particularly if there is an accompanying dysfunction of the liver, as that seen in chronic alcoholism, rather sharply outlined erythematous macular patches are noted over the trunk as well as the extremities. These lesions often fuse to cover large areas and tend to be slightly eczematized. One patient exhibited sharply defined gyrate figures on the trunk, especially over the chest and abdomen, giving the clinical picture of erythema annulare centrifugum of Darier. In a few patients moderate erythema of the face and neck with mild accompanying edema has been noted, but in these areas the sharp line of demarcation from the surrounding skin has not been so discernible. Recently several patients with chronic pruritic coin sized to palm sized eczematized patches scattered over the forearms and the extensor surfaces of the hands have also been found to fall in this protein deficiency state. These latter lesions were observed in young adults as well as in the older age groups.

In all cases of generalized exfoliative dermatitis as seen due to internally administered drugs such as penicillin and arsenicals, or accompanying psoriasis, the plasma total proteins and the amounts of the albumin and globulin fractions should be investigated as soon as possible. Peters[6] reported two cases of exfoliative dermatitis which improved steadily under therapy with cystine after chemical determinations showed a great loss of this sulfur-containing amino acid in the desquamated epithelium. Goldsmith,[7] in 1947, mentioned the possible benefit of protein hydrolysates supplementing a high protein diet in two cases of exfoliative dermatitis. His two patients showed complete clearing of the skin in a few weeks after instituting this regime when the usual therapeutic procedures of local measures and vitamins had failed.

Severe generalized bullous diseases, in addition to pemphigus vulgaris, as erythema multiforme, dermatitis herpetiformis and lupus erythematosus, may all have an accompanying hypoalbuminemia. The plasma total proteins and their fractions should be checked in all of these diseases to determine if the administration of protein in the diet and supplementation with oral amino acids or intravenous plasma or protein hydrolysates are to be an essential part of the therapy.

Surgical wounds that do not heal, but particularly if there is a constant serous exudate, should lead one to investigation of the plasma proteins. One example brought to my attention was a man whose leg had been amputated just below the knee for diabetic gangrene. The stump continued to ooze, even though wet packs and penicillin were administered. An investigation of the plasma proteins showed evidence of hypoalbuminemia which, on correction by addition of protein to the diet, readily healed. Bedsores are definitely known to be associated with protein metabolism. Mulholland[8] investigated a series of thirty-five patients with decubitus ulcers, and he observed that plasma protein concentration was invariably below the lower limits occurring in healthy persons. The extent and the depth of ulcers seemed to be related to the level of this concentration. When a mixture of amino acids and dextrose was added to the diet, the ulcers healed promptly.

Only recently have I observed that generalized pruritic patches of erythema, with or without eczematization which follow varicose eczema with or without ulceration of the ankle, usually have an accompanying hypoalbuminemia. Oral administration of amino acids to a diet high in protein are a necessary therapeutic adjunct to eliminate this allergic reaction before permanent cure by surgical stripping out of the varicosities can be undertaken.

The general practitioner and the dermatologist are confronted at times by patients usually past the age of 60 who complain of severe generalized pruritus. The skin of these persons reveals nothing but some areas of redness and excoriations. This condition is spoken of as senile pruritus, and usually is resistant to both external and internal therapy. The latter generally includes the administration of vitamins, antihistaminics, liver extract, iron, calcium, sedatives and endocrine substances. During the last few months I have had determinations of the plasma total proteins and their fractions made on all of these patients, and both the total protein and albumin portion have been found to be below the lower limits of normal in most of these people. Then, further careful questioning of their dietary habits has revealed the protein intake to be inadequate. Supplementing an increased amount of protein in their food with amino acid powder by mouth has usually given the desired relief from their pruritus.

Chronic atopic dermatitis or so-called disseminated neurodermatitis is likewise resistant to any therapeutic measure. This condition appears as lichenified dry reddened excoriated crusted patches on the face, neck, antecubital and popliteal areas of young adults and older children. It is well to study the plasma total proteins and their fractions in patients with this disease as hypoalbuminemia is not infrequently observed. When such a finding is obtained, regardless of the results of scratch or intradermal tests for foods, it is essential to increase the protein intake in the diet with supplementation of oral amino acid powder. This therapeutic measure alone may bring about a pronounced benefit in the appear-

ance of the eruption and in some cases cures have been reported by Keim.[9]

SUMMARY

Attention to determinations of the plasma total proteins and their fractions should be paid to all dermatoses of a chronic eczematous nature, especially if edema is present. Such eruptions may occur in any age group but are most frequently observed in adults past the age of 60. Other cutaneous conditions that should have such laboratory tests are: surgical wounds that do not heal, bed sores, all chronic bullous diseases, atopic dermatitis and senile pruritus.

Whenever the plasma albumin fraction is below normal limits, a trial high protein diet with supplementation by oral amino acid powders should be given as an integral part of the therapy for any of these skin manifestations.

DISCUSSION

CLINTON W. LANE, M.D., St. Louis: This has been an extremely interesting and valuable paper. Dr. Morgan has demonstrated a newer concept in the diagnosis of certain dermatoses which formerly have been difficult to diagnose and even more unsatisfactory to treat.

A common error in the handling of skin diseases is to consider most of them as a local irritation or a superficial infection and to disregard a possible relationship between the eruption and some internal disease or metabolic disorder. Many years ago Dr. Martin F. Engman, Sr., aptly stated that "The skin is a mirror of many underlying diseases." Examples of this are the yellow color of jaundice, indicating some liver or gallbladder disorder; the presence of purpuric spots or ecchymoses in relationship to an allergy, an infection or a blood dyscrasia; the pasty, waxy color of the skin occurring in primary and secondary anemias and the dry, rough skin that may be associated with hypothyroidism or with a vitamin deficiency. The present paper shows that certain inflammatory, and eczematoid eruptions, particularly of the lower extremities and the hands, may be associated with a deficiency of proteins in the blood.

It occurs most often in elderly people, for obvious reasons. Protein foods such as meat are difficult to chew and the difficulty of mastication causes many individuals to avoid such foods, particularly those with poor dentures and those who are edentulous. Again, older people, particularly widows and widowers, who prepare their own foods and most often those in the lower income brackets, have difficulty in purchasing foods of this type which are costly and avoid the time and trouble of preparing them. They are the individuals who most often show this particular type of eruption.

I fully agree with the conclusions of Dr. Morgan that this type of eczematoid dermatitis, some cases of exfoliative dermatitis and slow healing wounds and ulcers at times are associated with a hypoproteinemia and that correction of the dietary insufficiency plus suitable topical therapy promotes more rapid healing. However, I do not subscribe to the opinion that atopic dermatitis should be included in this category. In the vast majority of instances this disease begins either in the first few weeks or months of life when the diet of the infant or child contains a high amount of protein such as milk and eggs. Furthermore, atopic dermatitis tends to decrease in severity as one reaches adult life when protein intake is usually lower than in childhood, but the present concept is new and in the future all such cases should be checked to see if a protein deficiency does exist. If present, it probably indicates an inability to metabolize and store protein foods rather than a true hypoproteinemia or is due to low protein diet, which has been prescribed for an eczema presumed to be of an allergic type.

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HEADACHE

AN OTOLARYNGOLOGIST'S VIEWPOINT OF THE DIFFERENTIAL DIAGNOSIS AND TREATMENT OF OF CERTAIN TYPES

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ONE OF THE most common complaints encountered by the practicing physician today is headache. Headache is in itself not a disease but a symptom of a disease or illness that is either organic or psychologic. Because of the fact that there are so many different types, headache constitutes an enormous clinical problem in the field of medicine today.

Anatomically, pain in the head may originate in either the tissues covering the cranium or the cranial periosteum and endosteum, or certain intracranial structures. The intracranial structures sensitive to pain are: the trigeminal nerve, the glossopharyngeal nerve, the vagus nerve, the first three cervical nerves, the cerebral arteries, the dural arteries, parts of the dura at the base of the brain and the great venous sinuses and their venous tributaries from the surface of the brain. Insensitive to pain are the choroid plexus, the brain itself, the cranium, most of the dura, the ependymal lining of the ventricles and the pia-arachnoid.

Diagnosis of the types of headache a patient has

Presented at the 94th Annual Session of the Missouri State Medical Association, March 30-April 2, 1952, St. Louis.

should not be attempted until the patient has described completely his symptoms and the results of his general physical examination, laboratory tests and special diagnostic procedures have been reviewed. The patient should give his history and symptoms in his own words and the physician should be on the lookout for any element of nervous tension on the part of the patient while this is being done. If nervous tension is present, the patient, as well as the headache, have to be treated. Unless the nervous tension is combatted, no drug will be entirely successful in relieving the headache attacks. The subject of nervous tension is a delicate one and must be handled with care because the patient will be sensitive to any inference that the condition is "all in his head."

In every headache problem, a detailed history should be taken. The first important item which must be taken care of is to have the patient describe what he means when he says that he has a headache. The intensity, frequency and character of the pain will vary at different times and in different cases. Any family history of headache should be recalled. Perhaps the patient is suffering from more than one type of headache; if so, a careful history will reveal this. The history should start with the first attack of headache and should continue by recalling episodes in the sequence in which they actually occurred. The site and distribution of the pain should be noted. The time of onset of the headache is important in attempting to classify the headache. Important factors in classifying and identifying a headache are the presence or absence of tenderness, nausea, vomiting, rhinorrhea, conjunctivitis, lacrimation, sensitivity to light, sensitivity to temperature change and occupational influence. The site of the pain is also important; is it unilateral, bilateral or generalized?

Proper treatment cannot be instituted until the headache has been classified. A complete physical examination and routine laboratory tests should be performed. The eyes, ears, nose and throat, as well as the nervous system, should be examined carefully. It is often well to have roentgenographic examinations of the head, sinuses and, at times, special tests also may be indicated in cases in which the presence of certain organic lesions is suspected.

To discuss all the various types of headache within this time limit would be impossible. So, I will merely point out the more frequent types of headache problems found and elaborate on some of these.

Among the more common types of headache are migraine, myalgia, sinusitis, histaminic cephalalgia, tension headache, psychogenic headache, hypertensive headache, general vasodilating headache and premenstrual tension headache. Other common forms of head pain are: ocular headache (such as eye strain), otic headache, cerebral pathology headache (such as concussion, subarachnoid hemorrhage, brain tumor), trigeminal neuralgia, post lumbar puncture headache and oral cavity head pain. There are also headaches from infectious diseases, certain blood dyscrasias (such as anemias, polycythemia, leukemia and anorexia), temporal arteritis, certain cervical conditions (arthritis, neuralgia, tumors, dislocations and disks). Headache also can arise from certain drug and chemical poisonings. It also should be remembered that there is such a thing as a mixed type of headache in which two or more types of headache occur in the same patient, either at the same time or as individual and separate attacks.

Myalgia of the Head.—This type of head pain is characterized by a gradual onset and gradual termination. The area involved is tender to pressure and the pain may migrate from one area to another. This pain is often brought on by sudden temperature change, drafts, air conditioning. The pain may be generalized or localized.

This condition responds well when treated with nicotinic acid. This preparation is given intramuscularly and later on the physician can switch the patient over to the oral form of the medication. It should be pointed out that nicotinic acid should be used, not nicotinamide, as the amide does not produce the desired vasodilation. Roniacol also helps in some of these cases.

Sinusitis.—The average case of sinusitis headache presents a picture of acute inflammation in the nasal passages, usually with purulent nasal discharge. The nasal passages are congested and edematous. There are positive x-ray findings and possibly a slight temperature elevation. The area involved is usually tender to pressure. The pain is rather constant in nature, dull, and either unilateral or bilateral, depending upon which sinuses are involved.

In treating sinusitis, the medical form of treatment should consist of shrinkage and suction, heat, antibiotics and some form of analgesic. Of the antibiotics, I prefer penicillin, intramuscularly. The analgesics will help in the symptomatic relief of the pain. Such preparations as aspirin or empirin compound often help, but at times something a little stronger may be needed. Recently, I have been using an experimental preparation called fiorinal, which seems helpful in sinus headache. It contains caffeine, aspirin, acetophenetidin and sandoptal.

If sinusitis cases do not respond to the medical form of treatment, the surgical aspect must be considered.

Tension Headache.—This type of headache is usually throbbing, periodic, dull, generalized or localized, and varying in severity. The patient is of a nervous personality and conscientious. He does not know how to relax or rest and is always under tension. The attacks frequently occur at night and are often seen with migraine.

These patients need a personality adjustment and must be shown how to relax and enjoy life. This is an important factor in their treatment. Some cases respond to intravenous histamine. Mild sedatives and heat sometimes offer some relief, as may analgesics. I have found a new experimental preparation, E. C. B. P.-163 to be helpful in a majority of these cases. This is a rectal suppository consisting of ergotamine tartrate, caffeine, bellafoline and pentobarbital. This is especially helpful in migraine tension headaches.

Psychogenic Headache.—This type of patient is never inconvenienced by his headache either at work, play or sleep. The patient is not unhappy, but is tense and has an apprehensive personality. His complaints are bizarre. The pain may be of any type or in any location; it is more severe with emotional disturbances, stress or strain. Usually these patients have normal physical findings, neurologic, fundi examination, otolaryngologic examination, blood pressure and skull and sinus x-rays.

The treatment of this type of headache, of course, is a personality adjustment and reassurance to the patient that nothing serious or organic is wrong.

Histaminic Cephalalgia.—This is probably one of the most severe forms of head pain known to mankind. The pain is constant, burning or boring, unilateral, of short duration, excruciating and more severe on reclining. It usually occurs during the sleeping hours, having a sudden onset and sudden termination.

The histaminic cephalalgia patient will have on the side involved certain definite manifestations associated with his headache attacks. Among these will be a rhinorrhea, nasal congestion, lacrimation and conjunctivitis. Also, on the side involved, there will be a swelling of the temporal vessels and an increase in surface temperature.

This form of head pain is treated prophylactically by histamine desensitization. Nicotinic acid along with the histamine is often of value. This can be given orally.

The symptomatic form of treatment of histaminic cephalalgia consists of D. H. E.-45, Cafergot, or the previously mentioned experimental rectal suppository, E. C. B. P.-163. D. H. E.-45 is taken by the injection route, Cafergot, orally, and the E. C. B. P.-163, rectally. These preparations do not cure the patient but merely abort the attack.

Migraine.—This form of headache is more frequently seen in women and often associated with their menstrual periods, either preceding or during the period. These headaches have a family history tendency and are usually accompanied by photophobia, scotomata, anorexia, nausea and perhaps vomiting. I have yet to see a true patient with migraine who does not state that he has a "sick headache." These attacks are often associated with tension. The pain is throbbing, periodic, hemicranial and present for several hours or days.

Usually, there are normal skull x-rays, general physical examination, eye grounds, neurologic and electro-encephalogram.

In treating migraine prophylactically, I employ histamine, desensitizing either subcutaneously or intravenously. Nicotinic acid orally often helps with the histamine if taken in between the injections.

During the last few years several new preparations have been used in the symptomatic treatment of migraine. The more successful drugs now on the market for the treatment of these two vascular types of headache are Cafergot, D. H. E.-45, Octin and Valoctin. These preparations are used primarily to abort the headache attacks. The first report on Cafergot was made in 1948.[1] Further reports on Cafergot were made in 1949 and 1950.[2, 3] The first report on D. H. E.-45 was made by Horton[4] in 1942 and Peters[5] reported on Octin in 1949. All reports on these drugs for the symptomatic treatment were consistent in one thing, all drugs produced some side effects of mild nature and a certain number of cases would not respond. The percentage of failures varies with each individual agent.

I have stated before[6] that it is my opinion that it is a tension element which causes these failures. If a true breakdown of most migraine cases were made, I believe that a majority of them would be found to consist of a combination of migraine and tension.

Many migraine patients experience so much nausea and vomiting with attacks that it is practically an impossibility for them to retain any type of medication taken orally. This, plus the fact that absorption through the stomach is poor following nausea and vomiting, has led to the idea of the rectal suppository form of administration. A previous report was made on four types of suppositories used in migraine which were found to be not too successful.[6]

In dealing with the tension element in these migraine patients, the most logical solution is, of course, to remove the cause of the tension. However, this is often easier said than done because in most of the cases the tension factor ties in with the patient's occupation, home life, age or other factors which are not too easily changed in any complete form, although some minor adjustments can be made in most of the cases. Another method by which the tension factor can be combatted is by a mild sedative. The ergotamine tartrate and caffeine combination has proven effective in relieving the headache phase of this problem. The addition of bellafoline to Cafergot (ergotamine tartrate and caffeine) seems to cut down the gastric side effects in some cases.[7] Ergotamine tartrate is a sympathetic sedative and caffeine is a central stimulant. Bellafoline acts as a parasympathetic inhibitor, relieving smooth muscle spasm and controlling hypersecretion.[8] Bellafoline has been found to be less toxic than

similar drugs used at the same dosage level.[9]

Therefore, in discussing the preparation for this new agent to be used in migraine, I suggested that in addition to the three drugs, ergotamine tartrate, caffeine and bellafoline, a sedative be added to try and combat the tension factor. A new agent was prepared which contained 2.0 mg. ergotamine tartrate, 100 mg. caffeine, 0.25 mg. bellafoline and 60.0 mg. pentobarbital sodium. This preparation was made in the rectal suppository form and is known experimentally as E. C. B. P.-163.*

In many cases it was rather confusing to the patient when he was told to take a preparation rectally for the purpose of relieving his headache attack. It should be explained to the patient that this suppository will in no way act as a laxative but is merely intended to relieve the headache attack. It should be explained further that the suppository should be taken as soon as possible after the headache attack starts. One suppository seems to be the best average dosage.

The average dosage of the oral preparations was found to be two tablets at the immediate onset of the headache attack. The dosage of the suppository form is one suppository taken at the onset of the attack. However, it does not seem necessary that the suppository be taken at the immediate onset of the attack. In many cases the patient was unable to take the suppository immediately but it seemed to work about as well. This in itself is a great advantage of E. C. B. P.-163 over the oral preparations.

The reason, of course, for the continued research in the field of headache is to find a preparation which will be successful in aborting the attacks but which will produce little or no side effects.

Table 1 compares the results obtained with Cafergot, previously reported, and those with E. C. B. P.-163.

Table 1. *Comparison of Results*

	Migraine Results				Histaminic Cephalgia Results			
	No. Cases	Excellent	Good	Poor	No. Cases	Excellent	Good	Poor
Cafergot	110	81	18	11	46	37	5	4
E. C. B. P.-163	32	28	2	2	8	7	1	0

Excellent indicates complete relief.
Good indicates partial relief.
Poor indicates little or no relief.

The results obtained show that the addition of a sedative to the ergotamine tartrate, caffeine and bellafoline was a tremendous step in the advancement of the treatment of these two types of headaches. The results further show that perhaps the theory of a tension factor being the causative agent for the many failures met in the treatment of these two types of vascular headache may be the correct solution.

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* Thanks to Mr. Sideny H. Lane of the Sandoz Pharmaceutical Company for supplying this material for clinical investigation.

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BOOK REVIEW

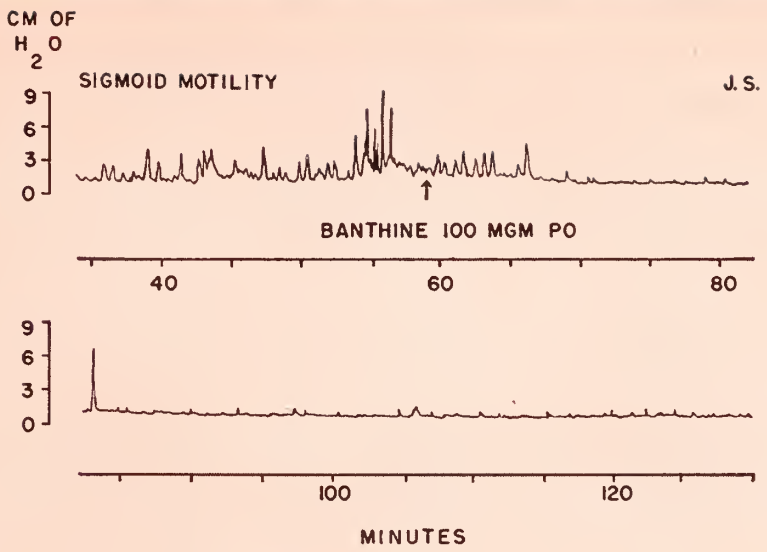
YOU AND YOUR HEART, A Clinic for Laymen on the Heart and Circulation, H. M. Martin, M.D., and T. Duckett Jones, M.D., Irvine H. Page, M.D., Irving S. Wright, M.D., David D. Rutstein, M.D., Foreword by Paul D. White, M.D. Random House, New York. 1950. Price $3.00.

This is an excellent book written by experts especially for the laymen. In order to be certain the medical information compiled in this book would be understood by the layman, it was translated into nonmedical language by Mr. David Loth. This combination of authors has produced a readable and accurate book.

The first few chapters are devoted to a brief explanation of the physiology and anatomy of the cardiovascular system. There are also short chapters on the history of the important discoveries in our knowledge of heart disease. Then there is an up to date chapter on congenital heart disease with an excellent discussion on the recent surgical advances in this field. Dr. Marvin next discusses in more detail coronary heart disease. There are other chapters on preventable heart disease, symptoms that bring patients to the doctors because they are sure they have serious trouble with their heart but are usually not due to heart disease at all, such as palpitation, chest pain, fainting. Following chapters are devoted to rheumatic fever (Jones); hypertension (Page); disease of the blood vessels (Wright); public health aspects of heart disease (Rutstein) and finally two chapters on common fallacies about heart disease and unanswered questions about heart disease.

After one has read this book he can not help but feel more optimistic about the outlook for the future. One appreciates the tremendous reserve capacity of the heart. It should make the patient with coronary heart disease or hypertension less apprehensive. It should also give the layman a better understanding of the need for research in heart disease and the potential benefits that may come from such research in the future.

This book may be highly recommended to laymen to give them an enlightened understanding of the present status of heart disease. H. C. W.



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Postgraduate Review

A CRITICAL SURVEY OF THE MANAGEMENT OF URETERAL CALCULI

E. HUMBER BURFORD, M.D.
ST. LOUIS

THE PROBLEM of ureteral calculus rightfully has enjoyed its share of attention for generations. More recently, with the advent of antibiotics, improved instruments and technics, a new philosophy of conservatism has materialized. Numerous authorities have contributed their experiences on this subject through the years; however most of them have developed some salient point. The purpose of this paper is to attempt to compile these experiences to obtain a more uniform method of management.

PREPARATION AND CLINICAL DATA

A large series of case reports from the literature together with mine comprise more than 8,000 cases of ureteral calculi. The series from my private practice numbers 763 cases in which 792 instances of ureteral calculi were encountered.

ETIOLOGY

Contributing factors are numerous and vary under as many different circumstances. The following facts are known and variations are with the different series of cases reported.

Certain geographic persistently warm to hot and arid areas are notorious for stone formation in the urinary tract. These are chiefly northern Africa, southeastern Asia and certain areas and islands in the southwest Pacific. In this country Florida and California with excess consumption of citrus fruit juice have approximately five times the incidence of stone formation as other sections.

Certainly the countries having the oldest civilization, the poorest hygiene and deficient diet have been the highest in urinary stone formation. Such countries are China, India, Russia, England and France.

Infections and toxemias are sometimes the causative factors in urinary lithiasis. Urinary stasis has long been known to be a factor.

Age incidence in my series was 69 per cent in the 20 to 50 and 88 per cent in the 20 to 60 year group. The average age in this series was 43 years. Protection of the very young and old in diet and exposure to adverse circumstances of excess heat may be contributory factors in this age distribution.

The sex incidence was 77 per cent among males in the series. In other words, three out of four patients developing this malady are men. This might be attributed to the fact that men are more often exposed to extremes of temperature and to trauma.

The most frequent side involved was the left, in 55 per cent of cases. The margin of error here makes even distribution more of a fact. Both sides were involved on separate occasions in twenty-one cases or 3 per cent.

Multiplicity of ureteral calculi revealed 96 per cent single and 4 per cent multiple, either in both ureters simultaneously or multiple calculi in one ureter. Some 5 per cent of the cases had urinary calculi elsewhere at the same time as the presenting ureteral calculus. Multiplicity of stones were more common among individuals with some contributory metabolic disorder.

The size of the ureteral calculi varied almost as much as their shape. Obviously those passed or obtained cystoscopically averaged smaller than those requiring surgery; still many were passed that were larger than some of those requiring operation. Those passed varied from as small as the head of an ordinary straight pin to 1 by 2 by 1 cm., averaging ½ by ¼ cm. Those at operation averaged 1 by 1½ by 1 cm.

The location of the calculus at the time x-ray record or catheter obstruction was noted was divided arbitrarily into upper, middle and lower segments of the ureter. Nine per cent were found in the upper, 14 per cent in the middle and 77 per cent in the lower ureter. The relatively high percentage caught in the lower segment of the ureter may be explained on the basis that the stone becomes larger as it progresses and must pass through the intramural portion of the ureter in the bladder wall.

The recurrence of stone in the same ureter points to some defect in the kidney and recurrence in the opposite ureter may indicate bilateral kidney defect or some metabolic disturbance. This occurred in 4 per cent. In my series, in instances in which actual recurrence was combined with instances of a history of having passed stones or having been operated on for urinary calculi, the incidence would increase to 16 per cent.

Nonopaque urinary calculi were found in 3 per cent. This type of calculus is usually composed of material whose chemical properties are not visualized by x-ray, such as uric acid. They are indicative of metabolic disturbance.

Obvious associated pathologic conditions encountered on routine pyelography which might be contributory to stasis or recurrent urinary tract infection were stricture of the ureter, nephroptosis, redundant and kinking ureter, or both, and branching ureter. These situations were found in 4.4 per cent.

SYMPTOMS

The usual symptoms of ureteral calculus are colic of severe nature on the affected side with or

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without radiation to testis, bladder, groin or penis. Instead there may be renal pain or pain in the testis radiating to the affected kidney. These pains may be accompanied by nausea with or without vomiting. There may be gross hematuria but when this is not present, usually microscopic red blood corpuscles are found on urinalysis. When chills or fever are present there is usually an associated infection. A history of having passed urinary calculi is most significant. Burning on urination or dysuria was observed in some with or without infection.

Physical examination usually reveals costovertebral tenderness or point tenderness along the course of the ureter near the site of the calculus.

Symptoms listed in order of frequency compared to those found in the literature are as follows:

Symptoms	Author's Series Per Cent	Combined Collected Series Per Cent
Colic or pain	83	78
Hematuria	58	66
Nausea and/or vomiting	28	35
History of stones	13	
Chills and fever	4	
Burning or dysuria	2	
Anuria	1	

DIAGNOSIS AND DIFFERENTIAL DIAGNOSIS

The surprising thing is that the diagnosis is missed at all, with possible exception of the so-called silent or asymptomatic ureteral calculus. The history and physical examination may be atypical, yet microscopic red cells in the urine should indicate a complete cystoscopic study with flat kidney, ureter and bladder and pyelogram. This is usually adequate to make a diagnosis. Gross hematuria is even more obvious. For non-opaque calculi, either obstruction to the passage of a ureteral catheter or pyelographic media and delay or diminished phenolsulfonphthalein are of assistance.

The most common x-ray errors in diagnosis are gallstones and phleboliths. These shadows can be displaced from the line of the ureter by lateral x-rays and ureterograms. Symptom complexes which may be confused with those of a ureteral calculus are in order of frequency those of appendicitis, cholecystitis and peptic ulcer, but one or more of these conditions may be coexistent. Ureteral calculus in diverticulum presents an additional problem.

The passage of ureteral catheter meeting temporary obstruction usually reveals retained urine behind it with spontaneous and complete relief to the patient on the removal of the urine. Absent or delayed phenolsulphonpthalein is the ordinary finding under such conditions. Delay in emptying or lack of pyeloureterogram in intravenous studies with dilatation of the upper urinary tract above the site of the calculus is the usual picture.

PROPHYLAXIS

As a more thorough knowledge of the cause of stone formation develops, its proper application will not only lower the rate of recurrence but will also prevent the initial appearance of stone.

Liberal use of water and fluids of all sorts, especially when the individual is exposed to excessive heat (seasonal, occupational, geographic) is of primary importance. Avoidance or neutralization of chemical substances which are known to be the major contributing factors of urinary calculi is to be desired. Alkalization, high calcium intake, dehydration and excess use of citrous fruit juices are to be avoided. Forcing fluids has long been known to assist the passage of ureteral calculi but has more recently been reported to actually dissolve some stones or decrease their size to the point of passage. Sedentary existence in "repeaters" should be changed. Patients with chronic stone formation should be investigated for possible presence of parathyroid tumors by blood chemical analysis for calcium, phosphorus and alkaline phosphatase. Often analysis of recovered calculi will reveal a composition useful in prophylaxis. If analysis of the blood is suggestive of hyperthyroidism an x-ray survey of the bony skeleton might be of help. Acid-ash or alkaline-ash diet as the chemistry of the stone indicates, excess vitamin A and administration of aluminum gels have prevented recurrence in many cases. Butt of Florida has shown the use of hyaluronidase subcutaneously to be effective in increasing the activity of protective urinary colloids against stone formation.

The presence of infection or foci should be determined and appropriate urinary antiseptics and antibiotics or both should be employed to correct this when found. It should be remembered that the stone itself is merely a symptom, and efforts should be made to correct causative conditions. Urinary stasis at all levels, whether congenital or acquired, of the urinary tract should be eliminated including nephrectomy in cases in which renal function is minimal and stone formation is the history.

Seasonal incidence was observed in 41 per cent of the cases during warm months of the year, assuming the formation of the stone began in May and precipitated from June through September, compared to 59 per cent cases during the other eight months of the year. This definitely bears out the premise that warm weather plus a failure to match it in proper hydration is a factor in the development of stones in certain individuals.

During World War II by far the greatest number of patients who had urinary calculi were those returned as patients from the south Pacific where climate was hot and adequate drinking water uncertain.

If metabolic diseases are suspected, they should be searched for, identified and corrected. Bed rest

following fractures of the spine, the pelvis and the thigh are frequently accompanied by stone formation in the upper urinary tract and special attention should be given to prophylaxis.

TREATMENT

Many factors determine the proper approach in the management of ureteral calculi. This paper pertains only to stones actually in the ureter and does not include those caught in the ureteropelvic junction, inclusion of which site would add an additional 250 cases. The factors are size of stone and ureter, location of stone, degree of pathology above the stone, infection, condition and age of the patient. A workable guide for this problem is suggested as follows:

1. Large calculus—surgery

(a. Watchful waiting (passive)
- (1. History of having passed calculi
- (2. Stone dissolving substances (Suby sol. "G" (Basaljel
- (3. Force fluids
- (4. Encourage activity
- (5. Manipulation when interrupted

2. Small calculus

(b. Manipulation (active)
- (1. Retain single or multiple catheters
- (2. Dilatation with bougie or catheters
- (3. Ureteral meatotomy (looped catheter, spiral,
- (4. Instruments (baskets, dislodgers
- (5. Surgery when interrupted

1. When an obvious disproportion between the size of the stone and the ureter exists, surgery is indicated when the patient has been prepared. It has been my custom to get a kidney, ureter, bladder x-ray before any surgery to check with the original position of the calculus just before operating to forestall the elusive character of these stones. Ureteral calculi have been seen to migrate either to the renal pelvis or the bladder. This procedure is adopted regardless of location. In a few instances the damage above the stone is severe enough to indicate nephrectomy.

2a. Watchful waiting may be pursued when the patient gives a history of passing other ureteral calculi, the stone is small and no progressive deliterious effects are developing. The use of dissolving media such as Suby's solution "G" externally per ureteral catheter or aluminum gels as Basaljel internally by mouth may facilitate this. Many patients will pass stones spontaneously without help of any other measures than physical activity and forcing fluids. A hypodermic of morphine and atropine relieves the pain and frequently is followed by expulsion of the stone. Manipulation may be employed any time progress seems to be interrupted.

2b. Manipulation is usually most successful when the calculus is located in the lower segment of the ureter, i.e., below the brim of the bony pelvis, although many have been recovered from higher positions. Manipulation consists in numerous procedures such as retaining one or more ureteral catheters, incising the ureteral orifice, the use of various instruments such as the looped catheter, spiral, baskets, dislodgers and dilatation of the ureter with bougies or graduated catheters. The use of instruments is not entirely without some dangers and complications, still the great percentage of recovery by this method precludes operation and makes it worth the small risk.

Repeated use of the retained catheter or catheters as first reported by Beer and Hahn has proved to be the simplest, safest and most effective mode of recovery of ureteral calculi. When multiple catheters are used the procedure on removal is to twist them to ensnare the calculus as the catheters are withdrawn. When the ureteral orifice proves tight, as demonstrated by the passage of ureteral catheter, it may be incised by electric current or cystoscopic scissors to advantage. In rare instances excessive bleeding may have to be coagulated by electrode.

At any time manipulation proves futile or the condition of the upper urinary tree, infection or age complicates the situation, surgery should be employed.

As an aid in the surgical removal of calculi situated deep in the lower ureter, a catheter, after the simple but ingenious fashion of McKay to exert upward traction on the bladder, is helpful in elevating the incarcerated calculus into the incision for removal.

This management pertains to the essentially normal urinary tract, but when a pathologic condition leading to stasis of the urine in found, it should be corrected, preferably at the time ureterolithotomy is done, when conditions permit.

RESULTS

Among the 792 instances of ureteral calculi encountered, those spontaneously passed number 107 cases or 13 per cent of the total. These were passed in an average time of five days.

Those cases in which the calculus was passed following cystoscopy numbered 371 cases or 47 per cent. An average time of twelve days was required for this. The number of cystoscopies with retention of ureteral catheter required for this passage was as follows: first cystoscopy, 245 cases; second, 82 cases; third, 25; fourth, 10; fifth, 6; seventh, 1; and eighth, 2 cases.

The ureteral calculus was obtained at cystoscopy by manipulation in 145 cases or 18 per cent. The various means by which the calculi were successfully recovered were as follows: by tip of ureteral catheter twenty-seven cases; by the metal spiral twenty-four cases; by basket seven cases; by stone dislodger eleven cases; by looped catheter twenty cases; and by forceps fifty-six cases.

The ureteral calculus was recovered as a result of cystoscopy or manipulation (exclusive of spontaneous passage or surgery) in 65 per cent of the

cases. Ureteral meatotomy was performed in forty-six cases or 6 per cent.

Surgery in the form of ureterolithotomy was performed on 155 cases or 20 per cent. Nephrectomy and ureterectomy with the calculus was necessary in sixteen cases or 2 per cent.

There were a total of ten cases in this series in which stones were seen and lost.

There were two deaths in the entire series or .25 per cent. Both of these deaths occurred prior to the advent of antibiotics and neither as a result of surgery. One case occurred in 1923 some twelve days after an ordinary cystoscopy. The patient had a severe filiform stricture of the urethra and was in near extremis from a hypernephroma. The other patient died of a pyelonephritis and septicemia four days following routine cystoscopy.

The results in the management of ureteral calculus of the entire series compared to that of the last five years reveals a distinct conservative trend as follows:

	Total Series Per Cent		*Last 5 Years Per Cent*	
Spontaneously passed	13		12	
Passed after cystoscopy	47	65	40	75
Recovered by manipulation	18		35	
Ureterolithotomy	20		12	
Nephrectomy-ureterectomy	2		1	
Total	100		100	

It is obvious that antibiotics and improved manipulative technics have increased the success of this method by 17 per cent and decreased the necessity of surgery by 9 per cent.

The following table gives a comparison in percentage of the series of patients with those of the combined collected series from the literature:

	Author's Series (Per cent)	*Combined Collected Series (Per cent)*
Age (20-50	69	74
(20-60	88	85
Sex (males)	77	75
Side involved (left)	55	55
Single calculus	96	88
Multiple calculi	4	12
Location (Upper ureter	9	10
(Middle ureter	14	18
(Lower ureter	77	72
Recurrence	4	5
Non-opaque calculus	3	6
Spontaneous passage	13	28
Passed postcystoscopy	47	17
Passed by cystoscopy or manipulation	65	69
Ureteral meatotomy	6	9
Ureterolithotomy	20	20.6
Nephrectomy-ureterectomy	2	3.4
Deaths	.25	.94

CONCLUSIONS

1. With the advent of improved medications and instruments the management of ureteral calculi is now conservative.

2. The choice of management in the hands of one skilled in the use of instruments and method should be left to them as the situation indicates.

3. With the increase in knowledge of calculus formation a decrease in incidence of recurrence and initial formation is to be expected.

4. Morbidity and mortality usually minimal are further reduced with the advent of antibiotics and conservative management. Deaths directly attributed to surgery varied from .3 per cent to 2 per cent with an average of .8 per cent. The series here reported had a mortality of .25 per cent with none since 1938.

5. Gentleness to avoid injury to ureter and its mucosa will prevent many late strictures and possible nephrectomies.

6. The necessity of surgery in the last five years has been reduced 10 per cent over the previous management.

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*Adams, C. H., and Cecil, R. L.: Ann. Int. Med. *33*:163, 1950.

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Case Report

TREATMENT OF SEBORRHEIC DERMATITIS ("DANDRUFF") WITH SELENIUM SULFIDE SUSPENSION

GORDON C. SAUER, M.D.
ST. JOSEPH

SEBORRHEIC DERMATITIS when confined to the scalp, the condition commonly called "dandruff," seldom is a serious or incapacitating dermatosis. Nonetheless, excepting drugs for the relief of aches and pains, oral sepsis and constipation, the people of this country spend more money for the control and treatment of "dandruff" than any other human ailment. It can properly be labeled as one of the nuisance dermatoses both to the patient and to the doctor. Recently a newly available chemical, selenium sulfide, as used in a shampoo, has been found to be of value in the control of common dandruff.

The fact that the shelves of drug stores and beauty shops are filled with preparations for "curing" or removing dandruff proves that the universal cure has not been found. A cure for seborrheic dermatitis perhaps never will be found. Such an agent would have to possess the capacity of selectively altering the exaggerated physiologic process of epidermal exfoliation and sebum formation that occurs in the seborrheic skin, without harming the adjacent normal epidermal exfoliation and sebum formation that is a function of healthy skin. There seems to be no conclusive proof for a hypothesis that seborrhea is due to infection or is contagious. There is a tendency for the condition to be more evident in certain families and be an inherited dermatosis. Although no cure has been found, certain drugs are effective in varying degrees in temporarily removing the excessive scaling of the scalp.

A satisfactory dandruff preparation must fulfill several requirements: (1) it must do the job specified by the manufacturer or doctor; (2) the agent must have a low index of sensitization and be nontoxic to the patient with a normal or a diseased scalp; (3) it must be acceptable cosmetically; (4) it must be easy to apply and not have to be applied too often, and (5) its cost to the patient must be in line with older remedies. Since most chemicals used for the treatment of dandruff can be incorporated in various vehicles, it is not surprising that the largest sellers over the drug counter are shampoos and lotions. These vehicles, various shampoos and lotions, generally satisfy the third and fourth criteria. The drugs themselves would influence the first, second and fifth criteria.

The drugs which in various combinations and strengths have been in common use for several decades include sulfur, resorcinol, salicylic acid, mercuric chloride, chloral hydrate, glycerine, castor oil and alcohol in different vehicles. Recently selenium was studied by Slinger and Hubbard[1] for its effect on seborrheic dermatitis. Selenium was selected for study because of its relationship and similarity of properties to sulfur in the period table of Mendelejeff. Selenium is toxic when taken internally, which quality it shares to a greater or lesser extent with mercury, sulfur, chloral hydrate and other drugs used for control of seborrhea. Nonetheless, studies by these investigators showed, in the cases tested, that no appreciable absorption occurred when the drug was used in a shampoo according to instructions. The toxic symptoms that have occurred in man following ingestion or inhalation of significant amounts of selenium include pallor, coated tongue, gastrointestinal disorders, nervousness, garlicky odor to the breath and acute sore throat.[2]

MATERIAL AND PROCEDURE

Selenium sulfide shampoo has been used by more than one hundred patients under my care since it appeared on the market and seventy-three of these patients have been followed for a period of from one to eight months. Of these seventy-three patients, sixty-two were seen because they desired treatment for their "dandruff," or had "dandruff" that I wished controlled as part of treatment for acne vulgaris. Of the remaining eleven patients, six had psoriasis, with or without concurrent seborrheic dermatitis, one had essential alopecia, one had furuncles of the scalp with seborrheic dermatitis, one had tinea capitis, one had nuchal neurodermatitis and one had senile pruritus of the scalp with seborrheic dermatitis. There was no group of controls but all patients had at one time or another used other therapeutic agents with no appreciable benefit, or had neglected to continue the use of these agents because of the labor or messiness involved. All patients had previously washed their hair regularly at least once a week with ordinary shampoos, and this was of no value in keeping their scalp clear of scaling or itching.

The instructions to the patients for use of the shampoo with selenium sulfide were the same to all except for variation in the frequency of application. The routine shampoo was to be done once a week, but when scaling was profuse it was done twice a week for the first two weeks, then once a week. The instructions* were as follows:

From the Thompson-Brumm-Knepper Clinic, St. Joseph, Missouri, and the Department of Dermatology and Syphilology, University of Kansas Medical Center, Kansas City, Kansas.

Abbott Laboratories supplied some of the selenium sulfide shampoo ("Selsun Suspension") used in this study.

* Printed instructions, similar to those given my patients, are available for the doctor from Abbott Laboratories.

(1) apply regular or medicinal (selenium) shampoo to the scalp and rinse; (2) apply the medicinal shampoo and rinse, and (3) apply the medicinal shampoo again but leave it on for five minutes before rinsing, then rinse thoroughly.

RESULTS

All of the sixty-two patients with seborrheic dermatitis were improved following the use of the shampoo as directed. After only two or three applications, the majority of patients were enthusiastic concerning the relief from scaling and itching if previously present. Psoriatic lesions in the six patients with psoriasis of the scalp were not appreciably altered. There was also no improvement in the patients with essential alopecia, tinea capitis, neurodermatitis or in the pruritus in the patient with senile pruritus and seborrheic dermatitis. The patient with furuncles of the scalp and seborrheic dermatitis improved but he received local therapy in addition to the shampoo.

One patient had been observed especially closely for several years. In this case moderate scaling and pruritic seborrheic dermatitis had its onset around the age of 12 years, concurrently with acne vulgaris of moderate severity. Occasionally the seborrheic dermatitis would spread with diffuse or circular patches of scaling and redness appearing on the upper eyelids, nasolabial folds, sternal region and ears. No specific therapy for the seborrheic condition was undertaken until four or five years ago. The first medication tried was Pragmatar (R) ointment applied to the scalp nightly or every other night. This was beneficial as long as the routine was maintained, but since assistance was necessary for application of the ointment, the procedure was discontinued after three or four weeks, followed by a prompt recurrence of the dermatosis. The lesions on the body responded similarly but with more lasting results. The concurrent acne also improved noticeably during the period of therapy for the "dandruff." The second therapeutic agent was a sulfonated castor oil shampoo weekly, which resulted in only moderate improvement in the seborrheic dermatitis. This method of treatment was continued for a longer time than the ointment because it was easier to apply. Various lotions were then tried that contained salicylic acid, mercuric chloride, colloidal sulfur, chloral hydrate, glycerine, alcohol and water. They also were relatively easy to apply as compared with the ointment but did not give satisfactory results on protracted use. When the shampoo with selenium sulfide was begun, the scalp was scaly and itchy as usual, and there was a circular scaling lesion beneath the right eyebrow and diffuse scaling and redness of the skin of the nasolabial folds. After using the shampoo for two weeks, these conditions were greatly improved, and in four weeks they were gone. When the supply of selenium sulfide shampoo was exhausted and an ordinary detergent shampoo had to be used for three weeks, there was a recurrence of all the conditions. On resumption of the selenium shampoo, the seborrheic condition disappeared again.

No toxic effects or sensitization to the selenium sulfide has been noted so far in this series of seventy-three cases. One female patient was critical of the odor, which resembles that of sulfur. An increase in the oiliness of the hair was noted in five cases and four of these patients thought it was objectionable. Two patients had white hair and noted no discoloration from the shampoo.

SUMMARY

A newly available chemical, selenium, has been incorporated in the form of its sulfide in a shampoo for the treatment of seborrheic dermatitis. Judged by clinical results in my series of sixty-two patients with this skin condition, the shampoo appears superior to previously used medication from the standpoints of (1) relieving scaliness and pruritus, (2) absence of toxicity and sensitization, (3) cosmetic acceptability, (4) ease of application, and (5) relative economy. The shampoo did not help cases of psoriasis, essential alopecia, tinea capitis, neurodermatitis or senile pruritus of the scalp.

Selenium sulfide shampoo does not cure "dandruff" but controls it as long as the shampoo is used regularly.

Since selenium is a chemical toxic for humans when absorbed internally, as are many dermatologic and other drugs, the physician who prescribes it must be alert for any untoward reactions. As the drug becomes more universally used, some allergic sensitizations may be expected to occur. If untoward reactions are found to be of the same low order of magnitude as reactions to sulfur, it is likely that selenium may supplement or complement this time honored drug in the treatment of various skin diseases such as acne vulgaris and diseases due to fungi.

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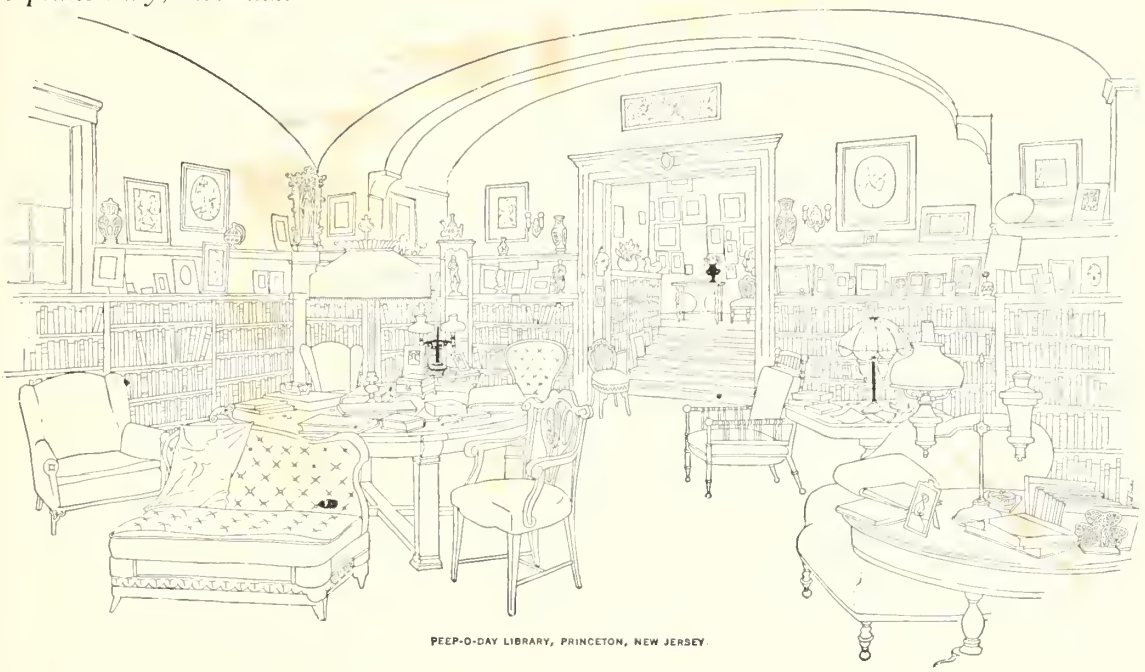
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COMMITTEE REPORT ON FEDERAL MEDICAL SERVICES

A progress report summarizing extensive research which is being conducted on federal medical services to dependents of servicemen and to veterans with nonservice connected disabilities, and the processing of patients between armed forces and veterans hospitals was submitted to the American Medical Association's House of Delegates meeting in June. The special subcommittee expects to make a complete report, with specific recommendations, in December.

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PRESIDENT'S PAGE

On several occasions it has been stressed in The Journal that every physician has the right and the duty to vote on November 4. Nothing need be added to that.



Little, if any, has been said about your Second Vote. You can vote every day of your life for Better Government at the cost to you of one 3 cent stamp.

To help you use your Second Vote, a directory of your state and federal legislators will be sent to you as soon after the election as possible. Use the directory and write to them whenever and as often as you wish.

Our legislators welcome your views on any topic that is under consideration. Why not, therefore, take advantage of your opportunity to cast your Second Vote by writing your opinions to them.

J. William Thompson M.D.

Editorials

NONPARTISAN OR NONPARTICIPANT?

Too often when the average physician hears the word "politics" he acts as though it were something that should not be mentioned in polite conversation. And, if anyone dares suggest that he should participate in politics, he is likely to look around cautiously, then whisper, "Don't say that word. I've got to be nonpartisan."

That is fine but being nonpartisan should not be confused with nonparticipation. One can be politically nonpartisan by not urging support for a particular candidate or party, but one can participate in politics by simply reminding one's family, relatives, friends and neighbors and fellow physicians to vote on November 4.

In foreign lands in recent crucial elections 90 per cent of Belgians voted; 89 per cent of Italians voted; 82 per cent of Englishmen voted; 70 per cent of Japanese voted.

But in the United States 51 per cent of Americans voted in the last presidential election.

Portions of both party platforms and statements of the two presidential candidates, dealing with medicine, are published in this issue of THE JOURNAL.

Let's be 100 per cent Americans! Let's vote November 4!

CONSTITUTIONAL AMENDMENT NO. 1

Constitutional Amendment No. 1, which will appear on the Nov. 4 ballot is a positive step in the move to improve legislative process.

The constitution of the state would be amended so as to limit regular sessions of the legislature to five months, special sessions would be limited to sixty days. The members of the assembly would be paid up to $10.00 per day as an expense allowance for every day that the rollcalls show them to be present. This expense allowance is to be paid in addition to the regular salary of $125.00 per month.

It is believed that the adoption of this amendment should help to speed up legislative sessions and improve the quality of the legislature by attracting a better grade of prospective legislators. There are too few men who are sufficiently interested or who can afford to enter the legislature at the present remuneration. At present the only compensation legislators receive is the salary of $125.00 per month and an allowance of 10 cents per mile for a round trip at the beginning of each session. Sessions have been running far too long; for example the 66th Missouri General Assembly adjourned sine die last April 30, covering a period of sixteen months.

Certainly, proposed Constitutional Amendment No. 1 may not be the entire answer; however, its adoption would be in the public interest.

HANDICAPS OF OVERWEIGHT

Overweight has been the subject of many medical treatises and probably has been a part of the conversation in a multitude of consultations. The Metropolitan Life Insurance Company has been stressing obesity for some time, as it did in the film "Cheers for Chubby" which was disseminated widely. In the August issue of the Statistical Bulletin, the company again stresses the "handicaps of overweight." It says in part:

The adverse effects on health are the major penalities of overweight. To a certain degree, this is reflected in the lessened ability to withstand medical and surgical emergencies. For the most part, however, the effects creep up stealthily and they do not show up until the individual is fairly well along in life.

Today when the chief germ enemies of mankind are coming under control in most Western nations, the degenerative diseases stand out as the principal causes of chronic disease and disability. Evidences are numerous that overweight persons suffer more frequently and earlier from these conditions than do persons of lighter build. Hypertension is a good example. This is illustrated by a study made among home office employees of the Metropolitan Life Insurance Company. It was found that at ages 35 to 44 diastolic blood pressures of 90 were recorded for 26 per cent of those classified as of heavy build, as compared with 15 per cent of persons of medium build and 9 per cent of persons of light build. At ages 45 to 54 the proportion with elevated diastolic pressure was 45 per cent for persons of heavy build, as compared with 31 per cent for those of medium build and 20 per cent for those of light build.

A study of Army officers showed similarly that sustained hypertension developed among overweight persons at an annual rate of 4.6 per 1,000, as compared with only 1.8 per 1,000 among officers who were not overweight. Further confirmation of this association between overweight and hypertension is found in studies of industrial workers and applicants for life insurance. Degenerative heart disease, associated with arteriosclerosis and hypertension, are likewise more frequent in overweight individuals.

Diabetes is perhaps the most striking penalty of overweight. Analysis of the weights of thousands of diabetic patients in one clinic showed that among those whose disease began at ages 40 and over, 85 per cent previously had been overweight in some degree and 60 per cent had been markedly overweight.

The association of overweight with gallbladder disease according to Metropolitan Life Insurance Company records showed over half the women and two fifths of the men accepted for insurance with a history of the condition were overweight.

Organization and Economics

NEWS

Edward J. McCormick, M.D., Toledo, Ohio, President-elect of the American Medical Association, was the principal speaker at the annual banquet of the Mississippi Valley Medical Society in St. Louis on October 2. Among other speakers at the banquet was J. William Thompson, M.D., St. Louis, President of the Missouri State Medical Association.

Sachez Pares, M.D., Madrid, Spain, addressed the St. Louis Academy of General Practice in St. Louis on October 28, speaking on "Peripheral Vascular Diseases."

The Veterans Administration is instituting a four month intensive training course in psychiatry and neurology to fit the needs of physicians without such previous training who are assigned to duty in twenty-two predominantly psychiatric hospitals. Physicians who have been engaged in general practice may request this training by applying at the nearest Veterans Administration Hospital or Regional Office, or by writing Chief Medical Director, Veterans Administration Central Office, Washington 25, D. C. The course will be held at the Veterans Administration hospitals in Coatesville, Pennsylvania; Palo Alto, California, and a joint Downey-Hines, Illinois, program near Chicago, Illinois.

MUSINGS OF THE FIELD SECRETARY

On Thursday, November 6, numerous nuggets of practical medical information are expected to be dropped at three important medical meetings of the state; namely, the Second Councilor District at Hannibal, the Eighth Councilor District at Joplin and the Clay County Society Clinical Conference at Excelsior Springs. The latter meeting begins at 11:00 a.m. and continues throughout the day and evening while the other two begin at 3:30 p.m. and continue through the evening. A special panel on "Trauma" will highlight the evening program of Districts Two and Eight. A special program for doctors' wives is an added feature at the Clinical Conference in Excelsior Springs.

More county health units, or now called county health centers, under recently enacted state law, are being promoted in various counties in rural Missouri. Some physicians have failed to inform themselves concerning the organization, operation and functions of a county health center.

There seems to be some disagreement these days between some public health personnel and some practicing physicians as to when health services become the practice of medicine. It would seem that on the local level such problems could be solved easily through easier gained information and understanding of the activities of all parties concerned.

The answer to a question is going begging. Do most doctors prefer local and district medical meetings to be scheduled on their day off or on the evening of their day off or on some other day or evening?

NEW MEMBERS

Bond, Marcus B., M.D., Kansas City.
Dodson, William W., M.D., Kansas City.
Drake, Roy F., M.D., Kansas City.
Gollub, Samuel W., M.D., St. Louis.
Hopkins, Thomas J., M.D., Sedalia.
Lowe, Alvin L., M.D., Sedalia.
Meinhardt, Ralph E., M.D., Joplin.
Overesch, Harry B., M.D., Kansas City.
Patterson, Grover S., M.D., Carthage.
Russell, Robert K., M.D., Raytown.
Weltscheff, Christo, A., M.D., Kansas City.

DEATHS

Garvin, Leo V., M.D., St. Louis, a graduate of St. Louis University School of Medicine, 1924; member of the St. Louis Medical Society; aged 57; died August 15.

Miller, Hugh, M.D., Kansas City, a graduate of the Kansas City Medical College, 1897; honor member of the Jackson County Medical Society; aged 85; died September 11.

Lux, Paul, M.D., Kansas City, a graduate of the University Medical College of Kansas City, 1905; honor member of the Jackson County Medical Society; aged 68; died September 20.

Broeder, William H., M.D., St. Louis, a graduate of Washington University School of Medicine, 1923; member of the St. Louis Medical Society; aged 55; died September 26.

Bell, J. Vardiman, M.D., Kansas City, a graduate of Northwestern University Medical School, 1920; member of the Jackson County Medical Society; aged 60; died September 29.

NATIONAL EDUCATION CAMPAIGN TERMINATES

Louis H. Bauer, M.D., President of the American Medical Association, has announced that Elmer L. Henderson, M.D., Chairman of the American Medical Association Coordinating Committee, and Clem Whitaker and Leone Baxter, Directors of the American Medical Association National Education Campaign, have resigned to participate in the presidential campaign. Dr. Bauer's statement follows:

"Dr. Elmer L. Henderson of Louisville, Kentucky,

Chairman of the Association's Coordinating Committee, which has supervised the campaign against socialized medicine, has resigned his committee chairmanship so that he may be free to participate in the presidential election campaign.

"Clem Whitaker and Leone Baxter have asked to be released from their public relations assignment for the same reason.

"These resignations mark the official termination of the American Medical Association's National Education Campaign, which for the past four years has been eminently successful in arousing the American people to the dangers of socialized medicine, and which has played a vital part in accelerating the growth and development of Voluntary Health Insurance. The American Medical Association, on this occasion, wishes to thank the American people for their heartening demonstration of confidence and support.

"The American Medical Association, as a nonpartisan, professional organization, is barred, both ethically and legally, from participating in election campaigns, which explains the action of Dr. Henderson and Mr. Whitaker and Miss Baxter in asking for their releases from A.M.A. duties. The Association will take no part in the presidential election, except to join with other nonpartisan groups in urging all eligible voters to cast their ballots on election day, regardless of their affiliations or preferences. Individual doctors, of course, are entirely free to engage in election activities and, in fact, have a very real responsibility to make their influence felt for good government."

SOUTHERN MEDICAL ASSOCIATION MEETS IN MIAMI

Alphonse McMahon, M.D., St. Louis, will serve as First Vice President, and Grayson Carroll, M.D., St. Louis, will serve as Councilor from Missouri at the forty-sixth annual session of the Southern Medical Association which will convene in Miami, Florida, November 10 to 13. All activities of the session will be in the Municipal Auditorium in Bayfront Park and in nearby hotels. All scientific activities, meetings and exhibits will be available to physicians who are members in good standing of their local and state medical societies.

There will be general sessions and section meetings on general practice, medicine, gastroenterology, neurology and psychiatry, pediatrics, pathology, radiology, dermatology and syphilology, allergy, physical medicine and rehabilitation, industrial medicine and suggery, surgery, orthropedic and traumatic surgery, gynecology, obstetrics, urology, proctology, ophthalmology and otolaryngology, research in ophthalmology, anesthesiology, public health and medical education and hospital training.

DIVISION OF HEALTH

PROPOSED STREAM POLLUTION CONTROL LEGISLATION

In recent years much publicity has been given to the water pollution problem throughout the United States. Considerable progress has been made in the control of water pollution in Missouri through the efforts of the Division of Health in promoting the establishment of sewerage systems to eliminate local health hazards resulting from improper sewage disposal. However, it is recognized that much remains to be done.

The 66th General Assembly has given our municipalities an important tool in the form of a revenue bond law which will enable many communities to construct needed sewerage facilities which they could not finance earlier because of constitutional limitations on general obligation bonded indebtedness. Nevertheless, a sound state water pollution control act coordinating the efforts and interests of all groups interested in this important problem is vital to the success of a comprehensive pollution control program in Missouri. With this thought the State Conservation Federation has established a Clean Streams Committee of which W. A. Bloom, M.D., Fayette, is Chairman. The Committee plans to sponsor appropriate State legislation and a preliminary draft of a proposed bill has already been prepared. The Committee is attempting to reconcile all water use interests to the end that any such legislative act adopted will properly recognize and consider all interests. The proposed act provides for the creation, within the Division of Health, a Water Pollution Control Board representing health, conservation, recreation, agriculture and municipal interests. The Board shall have the responsibility of adopting and enforcing rules and regulations, of developing comprehensive plans for pollution control, of establishing standards of purity for various streams and of administering laws of the state relating to pollution control.

Missouri is one of the few remaining states without adequate water pollution control legislation. The speed with which Missouri establishes a sound program for the protection of streams depends upon the wishes of the citizens as expressed by the Legislature. It is sincerely hoped that the Clean Streams Committee of the State Conservation Federation will be supported actively in its efforts in the interest of the health and welfare of the state.

From the Bureau of Public Health Engineering.

PLATFORMS AND STATEMENTS OF PRESIDENTIAL CANDIDATES

The Association believes that all members are interested in the party platforms and in the views of the candidates on the health of the American people. The information presented is taken from the party platforms and from transcripts of statements made by the candidates.

Health Insurance Plank of the Democratic Party Platform

We will continue to work for better health for every American, especially our children. We pledge continued and wholehearted support for the campaign that modern medicine is waging against mental illness, cancer, heart disease and other diseases.

Research: We favor continued and vigorous support, from private and public sources, of research into the causes, prevention and cure of disease.

Medical Education: We advocate federal aid for medical education to help overcome the growing shortages of doctors, nurses and other trained health personnel.

Hospitals and Health Centers: We pledge continued support for federal aid to hospital construction. We pledge increased federal aid to promote public health through preventive programs and health services, especially in rural areas.

Cost of Medical Care: We also advocate a resolute attack on the heavy financial hazard of serious illness. We recognize that the costs of modern medical care have grown to be prohibitive for many millions of people. We commend President Truman for establishing the nonpartisan commission on the health needs of the nation to seek an acceptable solution of this urgent problem.

Statement of Mr. Stevenson at Columbus, Ohio, October 3

The hospital construction program is only a sound beginning toward meeting the medical needs of all our people. I am just as much opposed to socialized medicine as any doctor in this country, just as I would be opposed to socialization of my own profession of the law. I never want to see our physicians on a government pay roll, and I'm sure you do not either; you and I know that the United States already has the best system of medical care in the world—but we also know that it is not yet good enough.

Many small towns and rural areas still suffer from a dangerous shortage of doctors and nurses. Unhappily it looks as though private support is not enough and that it will take federal aid to help support the medical schools necessary to turn out enough doctors and nurses.

And so far we have found no way to cope with the problem of catastrophic illness, which may spell economic disaster for a whole family. No matter how thrifty, few families can ever protect themselves completely or endure the crushing cost of the accident which disables the father for life, or the case of rheumatic fever which puts a child in the hospital for months or years. We await the recommendations of the President's Commission on the Health Needs of the Nation, which is now holding hearings throughout the country and will make its report in December.

Health Insurance Plank of the Republican Party Platform

We recognize that the health of our people as well as their proper medical care cannot be maintained if subject to federal bureaucratic dictation. There should be a just division of responsibility between government, the physician, the voluntary hospital and voluntary health insurance. We are opposed to federal compulsory health insurance with its crushing cost, wasteful inefficiency, bureaucratic dead weight and debased standards of medical care. We shall support those health activities by government which stimulate the development of adequate hospital services without federal interference in local administration. We favor support of scientific research. We pledge our continuous encouragement of improved methods of assuring health protection.

Statement of General Dwight D. Eisenhower to the Press, New York, September 14

I have received a number of requests for comment on the various aspects of the health plank in the Republican party platform, and particularly on the question of compulsory health insurance.

In the first place, I think it is important for Americans to keep in mind the fact that the people in this country receive better medical care than anywhere else in the world. We recognize the local, state and federal government has a responsibility to assist the unfortunate, but it must not be in ways which will lessen or weaken the benefits already available to the vast majority. We must not, in providing for the few, wreck the system under which so many can obtain adequate care. In other words, we must look forward to progress and expansion of the good rather than resort to any foolish experiment that would nullify what our system has already achieved.

I am opposed to a federally operated and controlled system of medical care which is what the administration's compulsory health insurance scheme is, in fact. It would destroy things that are essential to high grade medical service. For instance, we must preserve the completely voluntary relationship between doctor and patient. This means that there must be no intermediary—and that is what the government becomes if the doctors get paid, not by the patient, but by the government. The progress of American medicine is no accident. It has been achieved because the doctors and scientists of this country had their hearts in their work. They were doing what they wanted to do, not what they were compelled to do. They had the incentive to constantly improve themselves, in order to rise in their own profession and to make a better living. Those incentives would disappear under government bureaucratic control because promotion and increased compensation for most doctors would come more by seniority than by merit.

But still more important is the effect of compulsory methods on the patients, whose confidence in the doctor may be seriously impaired. The patient may fear—and no doubt correctly in many cases—that he would receive regimented, assembly line treatment instead of care that is tailored to his individual needs. He may well fear that federal controls would be unrealistic or impractical because of dictation from Washington as contrasted with necessary regulation by local medical agencies, which are intimately acquainted with the widely different needs of each area of our country.

The patient would find that he would be worse off as a taxpayer, too, because it would require a whole new army of government clerks to handle the records that would be an essential part of a compulsory system.

Any move toward socialized medicine is sure to have one result; instead of the patient getting more and better medical care for less, he will get less and poorer medical care for more. Experience has shown that American medicine outstripped the world on a voluntary basis and on that basis—plus voluntary insurance plans, together with locally administered indigent medical care programs for those unable to participate—the needs of Americans will most adequately be met.

STATEMENTS PRESENTED AT PRESIDENT'S COMMISSION ON HEALTH

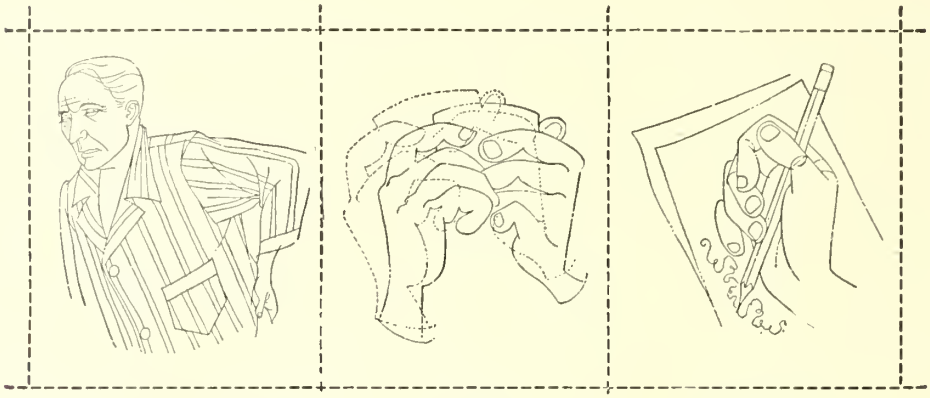
One of the regional meetings of the President's Commission on the Health Needs of the Nation was held in St. Louis on September 15. Several of the statements presented at the hearing, which it is felt



DON'T MISS 

APPEARING REGULARLY IN THE J. A. M. A.

new uniform oral dosage



in muscle spasm of rheumatic disorders | **in acute alcoholism** | **in certain neurologic disorders**

The new, uniform oral dose for adults is 1-3 grams. This may be repeated 3-5 times per day.

The first dose prescribed should be at the lower end of the recommended dosage range *(an occasional patient may complain of side effects when* large *doses are given at the* start *of Tolserol therapy).* Subsequent doses may be adjusted to the needs of the individual patient. Whenever possible, Tolserol should be given after meals. When Tolserol is given between meals, it is desirable that the patient first drink ⅓ glass of milk or fruit juice.

Tolserol

Squibb Mephenesin

Tablets, 0.5 Gm. and 0.25 Gm., bottles of 100; *Capsules,* 0.25 Gm., bottles of 100; *Elixir,* 0.1 Gm. per cc., pint bottles; *Intravenous Solution,* 20 mg. per cc., 50 cc. and 100 cc. ampuls.

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SQUIBB

would be of interest to members of the Association, follow.

J. W. Thompson, M.D., St. Louis, President of the Missouri State Medical Association, made the following statement for the Association:

STATEMENT OF THE MISSOURI STATE MEDICAL ASSOCIATION

In considering the question of health needs, it is most important to recognize that there can never be a final and complete fulfillment of the needs of human beings in the field of health. We are concerned, therefore, with a relative rather than an absolute question. In the field of health we have to do with progress—and the rate of progress—toward a goal that, by definition, can never be reached.

The function of health care and the purpose of supplying health needs is to defer death for the longest possible term. The science of medicine will always be progressing, but it will always be faced with a great residual unknown, which is to say, there will always be an area of health needs it is beyond the power of the physician and of society to supply.

If it is agreed that we are concerned with progress toward better health and longer life, our inquiry must be centered on the question of how we are progressing and at what rate. For the State of Missouri as well as for the nation as a whole, impressive objective data are available.

In the fifty years since 1900, the population of the State of Missouri has increased from 3,107,000 to 3,955,000, or roughly an increase of 27 per cent. The following table shows the progress that these fifty years have recorded toward a better meeting of the health needs of the people of the state. The figures are supplied by the State Division of Health and present the actual number of deaths from various causes in the years 1900, 1925 and 1950.

Deaths in Missouri From
Selected Causes in Selected Years

Cause	1900	1925	1950
Whooping Cough	380	201	55
Diptheria	1124	242	8
Measles	494	13	13
Typhoid Fever	1790	391	4
Tuberculosis	4107	3039	920
Pneumonia	4442	3590	1289
Malaria	965	189	1
Diarrhea & Enteritis Under 2	2466*	1019	72
Appendicitis	——**	566	80
Infant Deaths	6806	4665	2505
Maternal Deaths	355	435	70

* All ages in 1900.
**Not available in 1900.

The decline in mortality in every instance is startling. In spite of the population increase, the actual number of death from each of those causes has been cut to a degree that I believe would have seemed impossible at the turn of the century. A number of the diseases have, for practical purposes, altogether disappeared. In the overall, then, the record shows an astonishing rate of progress in Missouri in the never ending undertaking for better health.

Approximately one half of the people of the state reside in its two major metropolitan areas, Jackson County and the City and County of St. Louis. Representatives of the medical societies of these areas are presenting statements to this Commission. As spokesman for the Missouri State Medical Association, therefore, I shall concentrate my remarks on circumstances in the remainder of the state.

Before doing so, however, I believe it important to emphasize that the metropolitan areas provide a great reservoir of health service not only for the people of the entire state, but, to an important degree, for the people of the nation. The two medical schools in St. Louis, the excellent hospitals and talented physicians of both metropolitan areas, the public health officers, the nursing, technical and hospital personnel are all part of impressive centers of medical service, scientific research and therapeutic skill. From these medical centers there radiates into the whole state an influence making for higher health standards and to these medical centers come each year many thousands of persons to benefit from the facilities and pooled skills there available.

Turning our attention now to the remainder of the State of Missouri, let us consider health needs and progress toward meeting such needs under three headings: Availability of Medical Service, Cost of Medical Service and Physical Facilities.

1. *Availability of Medical Service:* The last decade or so has seen a basic change in the pattern of rural life. The development of hard roads, the general use of automobiles and the continuing improvement in rural economic circumstances underly the important change that has occurred. In terms of medical service, this means that the availability of a doctor must no longer be measured in terms of miles, but in terms of minutes. By such a measurement we may confidently assert that the people in all parts of Missouri are better served by the medical profession today than at any time in the past, and the availability of medical service is constantly improving.

This is not to say that there are not some areas in Missouri in which additional doctors are needed for the convenience and better service of the people. Progress toward meeting this need has been impressive since the war. Since January 1, 1946, the records of the Missouri State Medical Association indicate that a total of 494 physicians have taken up practice in areas of the state outside of the two metropolitan population centers. Of this total, 170 have moved into substantial cities in the state: St. Joseph, Springfield, Joplin, Columbia, Jefferson City, Cape Girardeau, Sedalia and Hannibal. Each of these cities—with a population of more than 15,000—is today an important center for medical service. In each of them there is a rounded group of competent physicians, many of them qualified in major specialties. The services of each of these important cities is conveniently available to a wide trade area.

Of the total number of physicians who have taken up practice in outstate Missouri since the war, 324 have settled in smaller communities.

The Missouri State Medical Association believes this is an impressive record of progress toward diffusing more widely and effectively throughout the state the skills of competent medical doctors. The Association has maintained and continues to maintain a master file of communities in which medical service might still be strengthened. Continuous effort is made to cooperate with such communities in obtaining needed medical personnel.

The Association has carried forward a program, interrupted by the Korean War but now to be reinstated, of annual meetings for all resident and intern

physicians in major hospitals at which the challenges and opportunities of rural practice are presented by medical men who have distinguished themselves in rural areas. The results of these meetings have been thoroughly gratifying.

To sum up, the Association believes impressive progress has been made toward a better distribution of medical service throughout the state and that this program will continue.

The knowledge, materials, equipment and technical assistance available to the practicing physician today enable him to do more effective work in less time than was ever possible before. It has been stated that a generation ago physicians spent only 30 per cent of their working hours actually seeing patients. At the present time, the percentage of working hours spent with patients is now reported to be 90. The net of this fact is that a greater volume of better medical service may now be provided by fewer doctors than was previously the case.

Important to the maintenance of standards of medical service in rural areas is the program of the Missouri State Medical Association to bring to doctors in all parts of Missouri periodic refresher programs to keep them abreast of new technics and new developments. This year-in-year-out program has a direct bearing on the effectiveness and efficiency of medical service throughout Missouri.

A final word on the supply of doctors. The decision of the Board of Curators of the University of Missouri to proceed with establishment of a four-year medical school may be expected to make an important contribution in years ahead.

II. *Cost of Medical Service:* There has been widespread recognition in the State of Missouri and particularly on the part of the medical profession that the prepayment principle is the essential key to progress in this area of health need. Recent years have seen extraordinary development of prepayment plans in the state. Others have made detailed statements as to the growth of these plans. I should like simply to state here that the two hospital plans serving Missourians now have a total enrollment of 1,254,663, and during the year 1951 paid out a total of $15,705,023 for service benefits.

The two medical service plans have a total membership of 617,765 and during 1951 paid out $4,973,158 for service benefits.

Intensive efforts continue to be made to extend these plans in the direction of ever greater benefits and to make possible more complete enrollment. In this effort there has been splendid cooperation between doctors, hospitals and farm, business and labor groups. Missouri is making impressive progress toward the solution of this economic problem.

In outstate Missouri I believe I can say with confidence that the people are now being taken care of. An overwhelming majority of them are being cared for on a basis that poses no critical economic problem. Studies and efforts continue to be made by local initiative and planning by groups of many sorts throughout the state to make even further progress here. These efforts are going to succeed. In the interim the doctors of Missouri are taking care of the people of Missouri and no one is going uncared for because he cannot pay.

To put it simply, there is no crisis in this question of cost of meeting health needs that warrants any turning away from the pattern of voluntary cooperative and individual effort at the local and state level. There is no crisis requiring intervention by the federal government or imposition of a compulsory health insurance program involving the drastic step of putting physicians on the federal payroll.

III. *Physical Facilities:* Modern medicine requires bricks and mortar, equipment and a wide range of facilities unknown to the doctor's office and simple rural hospital of a generation past. The supply and quality of medical service in rural areas depend very largely on the quality and availability of such physical facilities. The tools with which to practice are necessary to a scientifically educated doctor of today, and he is naturally reluctant to go where these tools are not available.

The past decade has seen rapid progress in improvement of the resources of outstate Missouri for health service. This progress has been particularly rapid since the enactment of the Hill-Burton legislation to aid local efforts for hospital construction.

Within the past decade an impressive number of new hospitals have been constructed or projected, some of them involving use of federal funds to match sums provided locally, and many others made possible entirely by local funds.

The public hospitals constructed during the last ten years, with federal participation, and now in use are at: Rolla, Kennett, Perryville, Springfield, Lexington and Hayti. An addition to the City Hospital at Nevada has been constructed with federal aid.

Two new hospitals are presently under construction with federal assistance. They are located at Troy and Milan.

Federal aid has been approved for substantial additions to existing hospitals at Mexico, Marshall, Louisiana, Monett and Chillicothe.

In addition to hospital projects involving use of federal aid, the decade has seen construction of hospitals with purely local funds at the following locations: Lamar, Branson, Sikeston, Fairfax, Marceline, Harrisonville, Mountain View, Princeton and Windsor.

Important additions to existing hospitals have been made, without federal aid, in the following communities: St. Joseph, Fayette, Warrensburg, Washington, Bonne Terre, Smithville, Kirksville, Cape Girardeau and Poplar Bluff.

These improvements in public hospital facilities have been supplemented to a very great degree by clinics and diagnostic set-ups provided by practicing physicians. It is not an overstatement to assert that Missouri is going forward at a most encouraging rate in extending the effectiveness of scientific medical care into every part of the state.

It is the view of the Missouri State Medical Association that the progress of Missouri—very briefly noted in the preceding paragraphs—is impressive. The Association believes deeply that the voluntary methods by which this program has been achieved—with the help of governmental agencies in appropriate circumstances, and, particularly, for hospital construction—have proved themselves to be methods conducive to great results. These voluntary procedures accord with the needs of our people and with the processes of local democratic action, local initiative and local responsibility that are part of the pattern of our civilization. The Association submits that there has been no failure from these methods, no breakdown, no halt in steady progress that would justify a drastic departure from our tested past practice. On the contrary, this prac-

tice has produced progress of the most exciting kind, and it promises even greater things for the future.

Jerome I. Simon, M.D., St. Louis, made the following statement from the St. Louis Medical Society:

STATEMENT OF THE ST. LOUIS MEDICAL SOCIETY

My name is Jerome I. Simon. I am engaged in the private practice of surgery in the City of St. Louis and am the 1952 president of the St. Louis Medical Society.

In presenting these views to this Commission, I should like, first of all, to make it clear that I appear today as a private practioner and a citizen of St. Louis and not in the capacity of spokesman for the St. Louis Medical Society. It was obviously impossible, in the short time available for the preparation of this statement, to consult each and every. member of the local medical profession in order to present a collective opinion. I think it is safe to say, however, that my personal observations will represent the opinion of the average doctor in this area whose full time efforts are devoted to the care of those who come to him for diagnosis and treatment, day in and day out.

About 2,200 physicians are available to the 857,000 residents of the City of St. Louis. There can be no question, I think, of the adequacy of medical coverage in the area. Others, I am sure, will discuss this coverage outside the city.

We boast of two top-flight medical schools—Washington and St. Louis universities—which, together with our voluntary and municipal hospitals, our fine Health Department, and our Medical Society, furnish clinical facilities and competent staffs to care for the indigent and low income groups of the city, as well as to provide a continuing program of health education to the public and postgraduate programs to our doctors. For medicine is not a static science, but one of ever changing concepts and new discoveries, which makes it mandatory for the modern physician to acquaint himself constantly with that which is new, and to maintain a close liaison with those educational sources that will keep him current and in a position to be of the greatest assistance to his patients.

St. Louis is fortunate in having an outstanding Health Department, under the capable administration of Dr. J. Earl Smith. This important section of our municipal government provides and supervises many vital services in the area. It is not my province to enumerate these activities, but I shall take the liberty of mentioning the great value of its neighborhood health centers, its new mental hygiene program, its venereal disease educational program, its health educational section, which provides a weekly news letter to approximately 1,800 recipients, including newspapers, radio stations, physicians, schools, hospitals, and many social and voluntary health agencies in the area. Its record in the field of communicable disease control ranks high in the standards of health control measures, and the high level of its standards of health control measures, and the high level of its standards for food sanitation in restaurants has been equalled by few cities in the nation.

In the matter of health education for the public, there has been increasing interest, manifested by ever increasing attendance, at the Medical Forum meetings in the St. Louis Medical Society Auditorium. Each month, a panel of medical society members who are experts in special fields such as arthritis, cancer, heart disease, diabetes, discuss these topics for public audiences. The question and answer method has proved to be very popular in these meetings, and there is every reason to believe that these programs will continue to grow in public approval and interest.

The voluntary health agencies of the city number many physicians on their boards, and the cooperation of the St. Louis Medical Society has always been available to those agencies which seek it.

An Emergency Call Service is in operation in this city, and the medical telephone exchanges have lists of volunteers from the Medical Society and the Academy of General Practice who stand ready to deliver such emergency service on call.

Time will not permit full discussion of the many facets in the improvement of the public health in which local physicians are participating. I would not be so foolish as to contend that medical service in the City of St. Louis has attained the peak of perfection. I do maintain, however, that the local medical profession is constantly alert to opportunities for greater service to the public, and is always mindful of its responsibilities in the field of public health. To mention but a few, its activities in tuberculosis surveys and in the detection of diabetes are excellent examples of a great public service.

It seems to me that there are no deficiencies or inadequacies in this area that cannot be solved and remedied on the local level and by voluntary action. The deficiencies that exist—in our municipal hospital care, for example—can be laid at the door of political rather than medical defection for there are more votes to be garnered by appropriations for parks and streets than can be gained by increasing the allowance for the City Hospital. In my opinion, this is a matter for municipal, not federal, action.

I should like to take this opportunity to express a private citizen's opinion in the matter of federal funds. Federal money is everybody's money. It is your money and mine, and it comes from the man in Portland, Maine, and the man in San Francisco, California. None of us complains about expenditures that are vital in the national interest, whether it be national defense and the Marshall plan, or whether it be salaries for immigration and quarantine officers in our seaports. In the matter of increasing funds for the St. Louis City Hospital, however, it seems to me that the man in Maine and the man in California has just cause for complaint when the federal government authorizes the use of his money to correct a situation in St. Louis that St. Louis can and should correct itself. Of Course, I am not overlooking the benefits of such measures as the Hill-Burton Act in those regions where the limitations of population or local resources render the establishment of health and hospital facilities impossible on a voluntary basis. It is entirely possible, however, that more participation in these enterprises could be made at the state level.

In short, with a few exceptions, federal handouts for local projects accomplish nothing but the postponement of that happy day in the too distant future when a tighter string on the government's purse will point up the responsibilities of local political authorities.

Carl F. Vohs, M.D., St. Louis, Vice President, Group Hospital Service, Inc., of St. Louis, made the following statement:

STATEMENT OF GROUP HOSPITAL SERVICE, INC., OF ST. LOUIS

The St. Louis Blue Cross Plan, since its inception, has pioneered in efforts to provide the maximum in hospital services to the greatest number of the people in our area at the lowest possible cost.

Our plan was organized in 1936 under the sponsorship of the St. Louis Medical Society, the St. Louis Dental Society, the hospitals of our city and civic leaders. Our board now includes representatives from the entire area of Missouri we serve.

In 1936, hospital care involved little more than room and board, general nursing care and fairly simple medications. You are well aware of the medical discoveries of the past decade which have proven so beneficial but which have necessarily increased the immediate cost to the patients. We in Blue Cross are proud to be part of a movement which is making rapid progress toward solving the average American family's problem of medical costs.

During its first year, our plan restricted its membership to the employed worker and limited care to twenty-one days a membership year. It was necessary to proceed with caution to safeguard the plan and assure its financial stability. At the end of the first year, our membership totaled 8,114 and we had paid hospital bills amounting to $14,158.00 for 306 members.

Wives and dependent children were added to our membership in the fall of 1937, and a year later the number of days' care was increased to thirty.

Outpatient care for accidents and for minor surgery, as well as fourteen days care in general hospitals for pulmonary tuberculosis, venereal, mental and nervous disorders, came in February of 1940.

Keeping pace with medical progress, we added such important services as glucose, oxygen, serum, all approved drugs, medicines and biologicals, dressings and costs. We increased the number of days' care in a year to sixty—all without increasing our membership dues.

Since the inflationary spiral hit our hospitals, it has become necessary for us to increase membership dues, but Blue Cross protection is of even greater value today because of the unique feature which provides services and not dollars.

Because of the sociologic aspect of Blue Cross we have attempted to reach all segments of our population through industry, the Missouri Farm Bureau Federation, the Automobile Club of Missouri, Extension groups, and community and county-wide enrollment.

We do not feel we will have fulfilled our goal until Blue Cross membership is available to everyone in our area. At the present time we are working on plans to offer membership to Missourians who cannot obtain protection through an organized group.

Blue Cross is proud of the fact that the members may retain their protection when they leave an employee group. Because of the transient nature of much of our population today, the eighty-seven Blue Cross plans cooperate in providing transfer privileges to members moving from one area to another. We have also worked out a method whereby our members may receive Blue Cross Service Benefits in member hospitals in almost every part of our country.

The record of the St. Louis Blue Cross speaks for itself. Since 1936 a total of $57,152,805.00 in hospital services have been received by 924,520 members. During the past year alone 157,543 members of our plan saved $12,336,218.00. Even when we include such services as luxury private rooms and professional services, our records show that Blue Cross covered 75 per cent of the total hospital expense last year.

Best proof of the real service Blue Cross renders to members from all walks of life is evidenced by the many letters we receive daily. These contain such phrases as "You get no ifs and ands—no red tape," "I cannot praise too highly the Blue Cross Service—and I do mean Service." Copies of a few of the more recent letters are attached to this statement.

In looking back over the past sixteen years we can see how the acceptance of Blue Cross has created a desire for even broader protection against catastrophic illness expense. Health and Welfare programs are an accepted fact in industry today. A special committee of our Board is studying a comprehensive program which will meet the full needs of these groups.

Blue Cross has helped to stabilize hospital income, relieve hospitals of credit problems and enable them to expand their facilities as well as raise the standard of living of employees.

Government can help retain the voluntary system and assure continuing improvement of the nation's health by encouraging legislation providing payroll deduction for local, state and federal employees and encouraging the states to develop intelligent programs for the care of the indigent and medically indigent.

Carl F. Vohs, M.D., St. Louis, President, Missouri Medical Service, made the following statement:

STATEMENT OF MISSOURI MEDICAL SERVICE

Last year Missouri Medical Service paid 56 per cent of the total medical-surgical expense of 39,630 Missourians who used our services.

Missouri Medical Service, popularly known as Blue Shield, is a nonprofit medical-surgical plan sponsored by the Missouri State Medical Association. It was developed in 1945 as a companion plan to Group Hospital Service of St. Louis and serves the same area of Missouri.

The rapid growth of Blue Shield to a membership of 316,472 in seven years testifies to the desire of the people for a program which permits them to budget for medical expense and at the same time retain the private patient-doctor relationship.

Blue Shield stresses the patient's free choice of doctor. Although more than 2,300 doctors are participating physicians and guarantee service to members, members are assured of full benefits when under the care of any licensed doctor of medicine.

Like Blue Cross, Blue Shield is constantly seeking ways of reaching a greater number of the population. To obtain economy of operation, the plan is sold by the St. Louis Blue Cross and at the present time we too are planning to make membership available to those not eligible for group membership through the medium of direct or individual enrollment.

We have not reached the millenium, gentlemen, but the doctors of Missouri and of the country as a whole are proud of the progress that has been made. Life insurance companies tell us that the death rate in recent years has been reduced drastically because of the availability of good hospital and medical care through prepayment plans.

Seven years is a very short space in which to judge


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46th Annual Meeting
SOUTHERN MEDICAL ASSOCIATION
Miami, November 10-13

A most cordial welcome awaits physicians of the South attending the Miami meeting of the Southern Medical Association. The meeting will consist of forty-nine half-day sessions presented by the twenty-one sections of the Association, which embrace every phase of medical practice. In addition to the section sessions there will be a general session, the annual dinner of the Association and outstanding scientific and technical exhibits.

This meeting will be the opportunity of the year for physicians of the South to attend a complete general medical meeting and at the same time enjoy a much-needed vacation during one of the most dëlightful periods of the year in beautiful Miami.

All activities of this meeting will be in the Municipal Auditorium in Bayfront Park and in near-by hotels, everything within walking distance. Good hotel accommodations are available for all who wish to attend this outstanding medical meeting.

Regardless of what any physician may be interested in, regardless of how general or how limited his interest, there will be at Miami a program to challenge that interest and make it worthwhile for him to attend.

Members of state and county medical societies may attend. Eligible physicians, members of state and county medical societies in the South can be and should be members of the Southern Medical Association. The annual dues of $10.00 include the Southern Medical Journal, a journal most valuable to physicians of the South, one that each should have on his reading table.

SOUTHERN MEDICAL ASSOCIATION
Empire Building
Birmingham 3, Alabama

Migraine In Children

"Migraine may appear during the first years of life. The presence of subjective signs, such as headache and flimmer scotoma, is often difficult to determine in young children. The true nature of the symptoms frequently remains obscure for years."

Vahlquist, B. and Hackzell, G.: Acta Paediatrica *38*: 622 (1949).

NO. OF CASES	SEX	AGE AT ONSET	CYCLIC VOMITING	DURATION OF ATTACK	INTENSITY
31	8 ♀ 23 ♂	3 yrs. (mean)	3 out of 31	2½ hrs.	severe in all cases

TABLE CONT'D

NO. OF CASES	UNILATERAL HEADACHE	NAUSEA	FLIMMER SCOTOMA	VERTIGO	HEREDITY
31	18 out of 31	31 out of 31	12 out of 31	6 out of 31	20 out of 31

(reference given above)

In a study of 400 adult migraine patients, it was revealed that 34% had suffered attacks before the age of 15.* These investigators concluded that childhood migraine was a much greater clinical problem than was previously believed and that psychodynamic mechanisms played an important part in the disease.

These criteria are useful in diagnosis:

Headache attacks with symptom-free intervals plus (at least two of the following) nausea, scintillating scotoma, hemicrania, and hereditary predisposition.

For symptomatic relief in these cases, Cafergot®, N.N.R. (ergotamine with caffeine) may be administered orally. For best results, give adequate dosage promptly.

For children within the age range 7 to 12 years—Cafergot® is administered, one tablet when the attack appears imminent followed by one additional tablet within 30 minutes. Not more than two Cafergot tablets should be administered to children within this age range.

In the adolescent age group, 12 to 18 years of age, the dosage may gradually be increased as necessary up to the usual adult dose, i.e., two tablets when the attack appears imminent followed by one tablet doses at half hour intervals until the attack is aborted. *(Total maximum dose for adults: six tablets for each attack.)*

* Katz, J., Friedman, A.P., and Gisolfi, A.: New York State J. Med. *50*: 2269 (Oct.) 1950.

Sandoz Pharmaceuticals
DIVISION OF SANDOZ CHEMICAL WORKS, INC.
68 CHARLTON STREET, NEW YORK 14, N. Y.

a program so revolutionary as prepaid medical care. But more than 22,000,000 Americans have expressed confidence in the ability of their doctor to help them solve the problem of meeting its cost.

And the striking thing about our typical Missouri medical care plan is that it began with local action to meet a local need. It began with a loan of $5000.00 from the Missouri State Medical Association. It has grown because it has met a need. Its annual payments for patient care to patients are now nearly $2,500,000.

When voluntary action can produce a record like this in so short a time, surely we may reasonably believe we have found the right way to solve the problem of the cost of medical care. Our task now is to intensify our efforts in this work that has meant so much for so many Americans. Surely this is not the time to change our direction and turn to compulsory federal action, which, one way or another, would require physicians to be paid by the government.

Mr. Chester G. Starr, Jefferson City, Secretary, Missouri Health Council, made the following statement for that organization:

STATEMENT OF MISSOURI HEALTH COUNCIL

By direction and authorization of the Executive Committee of the Missouri Health Council, I, as secretary of the Council, am presenting this statement. To provide information to the Commission relative to the composition of the Missouri Health Council, its objectives, its government, we wish to outline the objectives, the list of membership, both state wide and associate, and the Executive Committee. The Council is an organization of all agencies and associations in the State of Missouri which have a fundamental interest in better health for the citizens of the State.

Formation

The Missouri Health Council was organized in 1948 by various agencies and associations, which have a primary interest in better health in the State of Missouri. The objectives of the Council are stated as follows: "To bring together state wide organizations and agencies with a fundamental interest in health, for discussion, debate and interchange of opinions and planning; to serve as a clearing house on health problems and programs; to facilitate joint planning in order to encourage coordination of efforts on state and local levels."

An implied and verbal understanding among all members, in addition, is that the Council, as such, may not engage in any legislative activity. To protect the various governmental agencies from criticism, such an understanding is needed. There is nothing to prevent any member agency or association of the Council from doing legislative work as the particular agency or association may deem desirable or needed and such freedom of action has been exercised from time to time.

At the present date, there are twenty-nine state wide members as follows: Missouri College of Agriculture, Department of Rural Sociology, University of Missouri, Farmers Home Administration, Group Hospital Service of St. Louis, Group Hospital Service of Kansas City, Missouri Association for Social Welfare, Missouri Association of Osteopathic Physicians, Missouri Department of Education, Missouri Division of Health, Missouri Division, American Cancer Society, Missouri Farmers Association, Missouri Farm Bureau Federation, Missouri Home Economics Extension Council, Missouri Hospital Association, Missouri Medical Service, Surgical Care, Inc., Missouri Public Health Association, Missouri Society for Crippled Children and Adults, Missouri School of Medicine, Missouri Veterinary Medical Association, Missouri State Crippled Children Service, Missouri Dental Association, Missouri State Medical Association, Missouri Nurses Association, Missouri Teachers Association, National Foundation for Infantile Paralysis, Missouri Nutrition Council, Missouri Tuberculosis Association, and Missouri-Kansas District, American Association of Medical Social Workers.

Twenty-nine county and community councils are associate members as follow: Callaway County, Cape Girardeau County, Cass County, Douglas County, Dunklin County, Greene County, Howell County, Jackson County, Jefferson County, Johnson County, Laclede County, Lewis County, Macon County, Madison County, Mississippi County, Newton County, Perry County, Pike County, Pulaski County, Randolph County, Ray County, Saline County, Washington County, Webster County, Worth County, Wright County, Council of Social Agencies, Kansas City, Health and Hospital Division, St. Louis, Planning Commission, and Children's Mercy Hospital, Kansas City.

Government of the Council

At each annual meeting of the Council, the membership selects an Executive Committee for a term of one year. A chairman, chairman-elect, a secretary-treasurer and four directors form the committee. Between meetings of the Council, the Committee is charged with the work and responsibility of the Council. The present Committee is as follows: Chairman, Donald E. Pratt, Executive Secretary, Missouri Tuberculosis Association; Chairman-elect, Arthur Nebel, Director, Missouri Crippled Children Service; Secretary-Treasurer, Chester G. Starr, Director, Rural Health Service, Missouri Farm Bureau Federation. Directors are: Miss Mary Johnson, Field Director, Farmers Home Administration; Mr. B. W. Harrison, Field Agent, Missouri College of Agriculture; Dr. Robert L. McNamara, Missouri Public Health Association, and Mr. Lawrence D. Jones, Secretary, Missouri Association of Osteopathic Physicians.

Public Health

Active coordination of public health has been one of the primary objectives. Through membership in the Council, the Missouri Division of Health and the Missouri Public Health Association have been able to present their problems and at various times, the Council and its members have worked actively in lending aid, support and advice to these two agencies. At the request of Dr. Buford Hamilton, then Commissioner of Health, in 1951, a special committee of the Council made an intensive survey of the Missouri Division of Health and prepared a report, making certain recommendations and establishing some basic philosophy. This report had wide distribution in Missouri and other states. From the recommendations, a considerable number of advances were made by the Division of Health.

The Division of Health had been greatly handicapped in securing personnel due to a restrictive section in

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the Merit System act. This also affected materially the Missouri Public Health Association. Due to influence of many members of the Council, the immediate past General Assembly corrected this adverse condition.

Prior to a few years ago, the establishment of permanent rural county health centers or departments was impossible. Under the leadership of one member of the Council, abetted by several others, an act was passed and is in operation whereby the people of any county may vote a special mill tax and establish on a permanent basis, a county public health center. This act was amended, in the past General Assembly, by request of certain members of the Council, to remedy certain legal objections. At the present time, sixteen rural counties have voted to establish the permanent health center system. A dozen or more counties are working toward achievement of this goal. The shortage of public health personnel is a handicap in the promotion of more health centers. The recruitment of personnel outside of the state is not very satisfactory in that other states have been increasing pay schedules to keep their own personnel.

There are sixteen other counties which have, as the first step toward the permanent system, county nurses under a cooperative agreement between the Division of Health and our county courts.

The metropolitan areas of Jackson, Marion, St. Louis, Jasper and Greene counties and the City of St. Louis have well developed health departments under other acts. Of the four million people in the state, three quarters have access to organized local health service.

County Health Councils

As listed in a previous paragraph, there are many county health councils made up of interested persons and organizations working toward the betterment of health and health standards and levels. The Council perfected and placed into use a so-called "yardstick" by which the health needs of any community or county may be evaluated and programs for improvement can be planned.

The improvement of health in any community is dependent upon the wishes and wants of the people of any given community. No amount of "top side" advice and counsel can secure the activity and accomplishment of better health as does the united work of the people of the community. Any outside aid cannot enter until the community desires assistance. As an illustration of community work that is being done in the State of Missouri, by the interested local citizens, we present three examples.

Miller County Nutrition Survey

The Miller County Health Council, in 1951, desired to have a better nutrition level among the people of the county. To furnish the basic facts concerning the current level of nutrition, the council planned a survey of the eating habits, using the sampling block method. The blocks were selected for a fair average of the entire county and twenty-two members of the county council volunteered their services and time to conduct the survey. Some very striking results were tabulated to demonstrate the need of better nutrition. The results are being used in an intensive campaign by the county council to raise the level of the county. All work was on the volunteer basis and similarly the continuing work is being done.

Greene County Diabetic Campaign

The Greene County Health Council is now in its 27th continuous year, being the oldest county health council in the state. Each year, the council selects some health project for study and action. In 1950, due to appearance of diabetes in unsuspected cases, especially with children, the entire county was offered an opportunity to have testing for presence of the disease. With the City of Springfield within its borders, there was a sizable task. Almost one thousand different volunteers worked in some phase of the campaign, with use of diagnostic laboratories donated. A total of 12,000 samples were tested and of these 309 positive reactors were found. These reacting persons were followed up with exception of seventy who either refused to have treatment or had moved from the county in the interim between the reports and the follow-up. In 1952, this county council is undertaking a nutrition survey.

Dunklin County School Health Work Shop

Just recently, the people of Dunklin County have concluded a Work Shop for the study and formulating a program of school health in that area. A total of 179 interested people spent one day in discussing the various parts of the question, divided into seven sections. At the close of the day, the sections wove their recommendations into a united program and selected a committee of seven persons to work toward achieving the results desired, with the cooperation of the teachers and administrators of the schools, the county superintendent of schools and the Dunklin County Health Center.

These are illustrations of the people of a community working together to secure improvement of health standards and levels, using resources at hand and available. It is through such self planned and conducted programs that actual improvement can be expected.

Various State Activities

Polio Advisory Committee: At the request of the Missouri Division of Health, in 1950, the last epidemic year of infantile paralysis in Missouri, an advisory committee of various interested members functioned excellently in making a state wide plan for the prompt and efficient handling of all acute cases of this disease.

Tuberculosis Rehabilitation: An advisory committee of several members of the Council functioned in 1951 and early 1952, in drawing together various agencies and using various resources in the state for a rehabilitation program for patients, especially at the State Sanitorium at Mount Vernon. The net results were such that at the present time, the Missouri Tuberculosis Association has selected a special rehabilitation committee to formulate a state wide plan for use in all institutions for treatment of the disease.

May Health Conferences: Annually since the formation of the Council, a state wide May Health Conference has been held in the central part of the state. The primary purpose of the Conference is to "head lite" various health activities, to bring together many interested persons for discussion and to promote the idea of better health in Missouri. Attendance has been from 300 to 500 people.

Hall of Health: The Missouri State Fair attracts a large attendance of the citizens of the state and to

50 *and five*

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present a unified picture of the various health agencies, a number of the members have for several years, combined their educational exhibits in a Hall of Health.

Indigent Study

At a special meeting of the Council in September, 1951, a day was spent in discussion of the medical and hospital care needs of the indigents in the State of Missouri. Attendance of all persons or groups interested in the problem was invited and seventy-five persons of forty various groups, participated in the discussion. The net results of the conference was a request to the Missouri Health Council to make a study of the problem and formulate a state wide plan for handling the question. Since there is no system now being used and little reliable data on the problem, the Executive Committee of the Council selected a special committee of nineteen persons representing many of the interested and affected groups to formulate the study and plan. The special committee, after discussing the problem and setting the limit of the study to be only the medical and hospital needs of the indigent and medically indigent, requested the Institute of Research of the University of Missouri to make the factual survey of the state. Funds for this survey are being accumulated and shortly the Council will be able to authorize the Institute of Research to begin the study. When this factual study is ready for use, the special committee will then have all of the pertinent facts upon which to base a reasonable working plan. It is interesting to find that the membership of the Council is determined to raise the fund needed without use of any contribution from any source that uses taxes as support, either state or national.

Summary

The Missouri Health Council believes that:

1. Coordination of programs and work of existing agencies afford a most excellent opportunity to render better service by all agencies in the state and at less cost to every citizen in the state.

2. Such coordination will prevent friction and misunderstandings between agencies and associations. Even though some agencies may be somewhat apart in their general philosophy, common ground for advancement can be and is, actually, being found and active work is being done on these common problems.

3. Common problems can be studied and united action be taken rather than piecemeal attempts and possible less efficient results.

4. Required legislation that may be needed to correct health conditions or to permit interested people to secure action and favorable results, can be planned together by the various agencies and united action taken to secure such legislation that seems to be in the interest of better health for the citizens of the state.

5. By marshalling all resources in the health field, many desirable projects can be much easier achieved, at less expenses of time and money, and with maximum results.

6. If all of us in Missouri will work together, marshall our resources, pool undertakings, the health standards, facilities and levels will be greatly increased with the minimum of state and federal expenditures and direction. Local people know each other and can plan and administer plans better than any outside agency.

Mr. H. E. Slusher, Jefferson City, President, Missouri Farm Bureau Federation, made the following statement:

STATEMENT OF MISSOURI FARM BUREAU FEDERATION

Upon direction and authority of the Board of Directors of the Missouri Farm Bureau Federation, the following statement is made:

We would invite the attention of members of the Commission to the 1951 resolution of the American Farm Bureau Federation relative to rural health and which we quote as follows:

Rural Health

"The interest of rural people in better health is increasing. They are taking steps to provide more adequate medical, dental, hospital, nursing, and public health care in an increasing number of rural communities. More physicians, nurses, and hospitals are needed in many areas. State and local communities can, and should, further expand their programs; however, economic factors must be given consideration in determining additional hospital needs. Training of qualified persons can be expanded; local or private educational scholarships or loans will aid. It is not unreasonable to request the recipients of such aid to agree to practice for a minimum period of time in rural areas. Rural people can cooperate in financing medical offices and centers with equipment and other facilities. Education of the public on health and sanitary measures and the care and facilities available will improve rural health conditions.

"We will continue to cooperate with other groups in providing better voluntary medical care for rural people.

"Programs to deal with cancer, tuberculosis, venereal disease, polio, heart disease, rheumatic fever, and aid to crippled children should be given continued support.

"We endorse the American Red Cross National Blood Bank Program.

"Facilities of medical schools should be expanded. Existing facilities should be utilized to the greatest extent possible to train more physicians, surgeons, dentists, nurses, technicians, and public health officers. Full cooperation of rural people with our established health units and existing health programs should be encouraged.

"We urge the Extension Service and other educational groups to undertake more aggressive programs to inform rural people of available services and ways and means to meet and solve their medical, health, and sanitation needs.

"Greater emphasis should be placed upon preventive medicine.

"In states where permissive legislation for the creation of public health units does not exist, State Farm Bureaus should seek the enactment of such legislation.

"We favor voluntary plans providing medical, health, dental, and hospital insurance.

"We urge a friendly attitude and fuller understanding on the part of the medical profession toward private prepaid medical insurance plans and the principles of their operation. Collection of maximum payments allowable under such plans, where in excess of customary charges, should be discouraged. We deplore practices of some in the medical profession who take unfavorable advantage of the existence of

voluntary health protection plans, increase cost of service under them, and tend to defeat their successful operation. Such practices tend to stimulate a demand for compulsory health insurance or similar socialized medicine proposals. We oppose any form of compulsory health insurance.

"Proper nutrition and an adequate diet for all our people are among the best means of guaranteeing the health of producer and consumer alike. Educational programs should give greater emphasis to the importance of proper nutrition. We recommend more intensive research on the relationship of animal diseases to human health."

The delegates of the County Farm Bureaus, which represent at our annual meeting all of the membership of the Farm Bureau in Missouri, adopted, at the last annual meeting in November, 1951, the following resolution:

Rural Health

"We are proud of the part the Farm Bureau has played in the field of rural health and urge Farm Bureau members to continue to support measures which will improve opportunities for healthful living in our state, aiding in the organization of county health councils, medical health units, and hospitals wherever such facilities are needed. We realize that not until more hospitals and other medical facilities are established in rural areas will enough doctors return to the country to practice.

"We believe that our schools should carry a greater share of the responsibility of health education, both at elementary and secondary levels, and that health courses should be emphasized in teacher-training programs. We believe that services of the county health units should be available to teachers and school systems in their educational and correctional work.

"We deplore the practice of a few members of the medical profession who take advantage of existing voluntary prepaid health insurance plans by keeping patients in hospitals longer than necessary. This practice tends to increase costs and destroy the effectiveness of such programs. It also tends to stimulate the demand for compulsory health insurance and socialized medicine.

"We urge the early establishment of a state medical and nursing school. This school should be located where it will best serve rural Missouri and tie in with an expanded rural health program and insure the return of more doctors to rural areas.

"To standardize the quality of milk to the consumer and eliminate duplication of inspection costs, we advocate a plan whereby milk inspection will be performed by state inspectors following a national code. The inspection of milk being a service to the public should not be a charge against the producer."

As it may be seen by the resolution of the American Farm Bureau Federation and that of our own State Farm Bureau, the membership of the Farm Bureau—state and national—is definitely of the opinion that the increase in health standards, practices and levels is largely a matter for self help. From experience in Missouri, the members of the Farm Bureau are definitely of the opinion that most health measures and advances must come from the people resident in any community, county and state. In a few cases where demonstrations may be of value, outside aid may be of advantage, but it is only through the exercise of individual responsibility that the health standard of any individual can be raised; it is only through the united effort of a farm family that the health level of the family can become higher; and it is only through united community work that the community's health can rise above that of the current level.

The Missouri Farm Bureau wishes to cite as examples of this philosophy, various positive actions that have taken place within recent years, all due to interest and work of various Farm Bureau groups.

Voluntary Hospital and Medical Plans

The Missouri Farm Bureau began a cooperative program with the St. Louis Blue Cross Plan fourteen years ago and with the Kansas City Plan twelve years ago. The Farm Bureau undertook the acquisition of enrollment, the collection of all dues and the maintenance of the county units, without any recompense from the Plans. In the periods stated, the enrollment of Farm Bureau member families has grown until at the present time, 60,000 farm people are covered by the Blue Cross Plans.

The same general cooperative program was undertaken with the Kansas City and St. Louis Blue Shield Plans six years ago, when this Service was formed. The enrollment in the Blue Shield Plans, as of this date, of Farm Bureau families, is 22,000.

In the early work between the Blue Cross and the Farm Bureau, a great amount of encouragement for rural hospitals to become members of the Blue Cross was given by individuals and groups of Farm Bureau members. This work was accomplished with raising of hospital standards in many rural hospitals so they might qualify for Blue Cross membership.

Rural Hospitals

As a development of the work with Blue Cross, a number of county Farm Bureaus became interested in the securing of rural hospitals nearer to members of the Farm Bureau. The county Farm Bureau formed the starting point for movement in certain counties for building of county hospitals under an act providing authority for issuing bonds and the operation for such institutions. From time to time, this act has been amended so as to keep it modern and usable to the fullest extent. Five rural hospitals in needed areas are now built and in operation as a direct result of Farm Bureau leadership. At least four more have been built as an indirect result of leadership in the five mentioned.

The Farm Bureau was the leader, aided by certain other groups in the state, in securing enabling legislation to take advantage of the federal aid under the so-called Hill-Burton Act.

According to the latest report of the Missouri Hospital Advisory Commission, at the present time the actual number of beds in use, in approved general hospitals, represents 82 per cent of the total need in the state. With the completion and operation of presently planned and building projects, this percentage will increase to 90 per cent. In general hospital needs in rural Missouri, there are only two areas where reasonable adequate general hospital facilities are not available.

Supply of Physicians

The number of physicians for practice in rural Missouri is less than a generation ago. However,

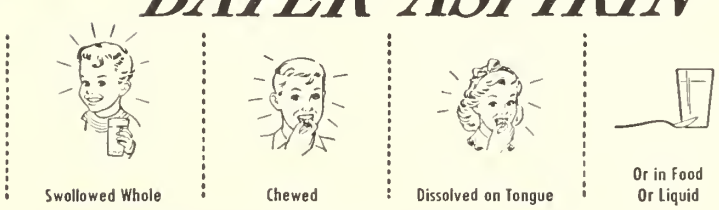


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it must be recognized with better roads and automobiles, with generally accepted methods of office calls, with larger use of diagnostic and treatment methods in hospitals, there is no need of doctors in every cross road in the state. The doctor of today, with his many improved means of diagnosis, with the many trained assistants, with much more immunization of people against certain infectious and contagious diseases, handles many more patients daily, weekly and annually than his counterpart of fifty years ago. The trend of rural areas toward having only the older, less ambitious practitioners, current up to recently, seems to be reversing, and as more facilities are provided in rural areas, more and more young physicians are moving to rural areas.

The state has needed a state medical school for many years. This fact has been recognized by many but the question of location of the school has been hotly debated in the state. The last General Assembly set aside a sum to provide the start of a state medical school by the University of Missouri, and the Board of Curators of this institution has definitely selected Columbia, the home of the University, as the location. Additional sums will be needed to provide the necessary teaching, hospital and medical facilities. These will be provided by the state as needed.

Supply of Nurses

The supply of nurses, both for actual hospital need and for public health, is short. The principal reason for shortage of nurses is the low range of salaries that have, up to recently, been common. The recent increase in salary range will induce more young people to enroll in the nursing field. Undoubtedly, as the State School of Medicine progresses, a nursing school will be developed. There is beginning to be a movement for the training of nurses aids and the recognition of the value of such assistants is becoming widespread and the supply of these people will increase in the next few years.

The women of the Farm Bureau have been active for many years in promoting the profession of nursing in rural areas and a common project with many county Farm Bureaus has been an attempt to interest high school girls in the profession. As an illustration, the women of the Holt County Farm Bureau secured the enrollment of over ninety high school girls in nursing schools recently.

The Home and Community Health Activities

For many years, the women of the Farm Bureau, through the State and county Home and Community Committees, have undertaken many projects in better nutrition, in home nursing, in hot school lunch programs, in examination and immunization of school children and babies, in surveys of health conditions in many areas. When all such work is added together, over the years, there have been a creditable number of better health projects conceived and accomplished.

Public Health

A survey some years ago disclosed that Missouri had no method of establishing permanent rural health departments or centers. The system used for many years had serious disadvantages and lacked permanency. The Farm Bureau undertook the work incidental to drafting a permanent system and enlisting the various other groups in the state, interested in such improvement. The first act permitting the people of any county to vote for, establish a health center, and to manage and operate such, was approved by the General Assembly in 1947. The two basic factors in the act were to provide a special county tax for the operation of the health center and to lodge responsibility of management with the people of the county. The act required amendment in the last General Assembly to overcome certain legal objections, and this was done with no opposition in the Assembly. At the present time, there are sixteen county units so approved by the people of the counties with at least twelve more working toward the achievement of this goal.

In certain counties with small tax valuations and with many people in resident, the Missouri Division of Health is aiding or would aid through state funds set aside for this particular purpose. However, the operation of the county health center is largely financed through local tax and very definitely, they are being managed by the local people. The original purpose of having the public health work financed at the county level and managed by the people themselves has had universal approval of the people of the state.

Summary

The membership of the Missouri Farm Bureau has always held that improvement of health in rural Missouri is a direct responsibility of the people themselves and that any outside assistance must be only incidental to the achievement of such purpose. Working through county Farm Bureaus, through the Home and Community Committees of such county organizations, through united effort, there has been great improvement in health standards and levels in the last twenty-five years. Of course, as goals are accomplished, new horizons appear and the end will never be in sight.

The financial support required in some health activities should come in large part from the people interested. Expenditures of funds for better health in a community, county or state, should be administered at the local level. None know local conditions and people as they, themselves, do. The management of local health centers must be in the hands of the local people; otherwise, waste of funds can be expected.

Preventive work to be most successful must have some local financing and responsibility. Curative work in the past has been extremely successful due to the efforts of the profession itself. This individual effort should never be jeopardized by any Federal encroachment or compulsory means to standardize the medical profession. The private relationship between doctor and patient should never be encroached upon.

Mr. Oscar A. Ehrhardt, Executive Secretary of the St. Louis Industrial Union Council, CIO, made the following statement:

STATEMENT OF THE ST. LOUIS INDUSTRIAL UNION COUNCIL, CIO

The St. Louis Industrial Union Council, CIO, representing some 65,000 wage earners in St. Louis, St. Louis County and St. Charles County, joins others in the interest of a national health program for our nation's people.

We have long recognized a serious need which be-

comes more pronounced as time goes on. The need not only exists among our membership, but it embraces the large majority of our nation's citizens.

We recognize the need for more doctors, dentists, hospital beds, nurses and medical research. It requires days to make a test to determine malignancy when minutes are important, at least, important to the individual and his family. An appointment with a dentist calls for an extended waiting period. M.D.'s enter into medical pools to secure relief from the constant demand for their services.

It is significant to note that this hearing, being held in one of the recognized medical centers of the world, finds the people in this area, while undoubtedly in a better position to receive medical and dental attention, yet even here we find medicine in all its categories inadequate to meet the needs.

There is a desperate need for expanding state and local public health services. These important and necessary departments are constantly struggling along with insufficient funds to even come close to fulfilling their desire to function properly and beneficially. Besides inspections, they can do little else, and even this phase is woefully lacking.

Industrial disease takes its toll each year, and for the most part is accepted as part of the game, when we know full well that many of these diseases can be prevented. Workmen's Compensation programs are not the answer. At the best they provide little comfort.

We believe it to be pure folly to concern ourselves only with curative medicine, when offtimes diagnostic and preventive medicine are equally or more important.

Many individual cases can be cited, setting forth information to prove the point that illness has caused not only the loss of wages and savings, but offtimes causing families to go heavily in debt. They all can only point to the cost in dollars and cents and as important as this is, what to us is more important is the lack of concern to make any attempt to prevent the many illnesses by providing proper attention. Innumerable heads of families have knowingly by-passed this phase of medicine not only because of the initial cost of check-ups, but because of the consequences. Rather than to determine through diagnosis the curable illness they may have, they have chosen to carry on through suffering because of the cost involved in curative medicine. These costs would deprive their families, and reduce their standards of living, sometimes to a breaking point.

Many years ago, some of these factors were recognized in some circles, and a method of prepaid hospitalization was established, not only to provide prepaid hospitalization, but also to guarantee payment to the hospitals. It filled a much-needed gap in this phase of protection; however, it was woefully lacking in filling all the needs which were present.

Labor unions, cognizant of these other needs, gave leadership to providing health plans through the system of collective bargaining. While these programs have been most beneficial they also are lacking in many respects.

People today find we are living in an era of specialists. Of the approximately 152,000 physicians in active private practice, 45,000 are specialists. We can see the merit of specialization and know the advantages of expertness, but it adds to the cost of illness to a point which most people can ill afford to meet. These necessary costs must be met in some fashion. Rural areas are hard pressed for decent medical care. While some cities have one M.D. per five hundred persons, 10 per cent of all counties in the United States have less than one active M.D. per 3,000 persons. Seventy-five counties have no active M.D. at all.

We do not quarrel with the medical profession but, to the contrary, laud their many accomplishments. Individually, doctors are extremely sympathetic and mankind is the beneficiary but, collectively, they present a menace to society. The St. Louis CIO Council has no interests or sympathies with socialized medicine, but a national health program is one of our most desperate needs.

We feel that the need for more doctors is appalling, and little being done to correct this serious condition. We find it difficult to understand the call for private grants and endowments to Universities for the teaching of medicine, knowing full well that these funds are subject to tax exemptions. Further, they do not relieve the costs in time and tuition to the individual which prevents many potential doctors from learning this profession.

While it is not my intention to quote statistics, as I know the Commission has plenty of factual material, I think it worth mentioning that, nationally, we have only one medical man for every 950 American people. Also worthwhile to mention is that by 1954 our nation will witness a shortage of some 22,000 physicians. While the quality of medical education has improved, we are training fewer doctors in proportion to our population today than in 1910. Only fourteen counties in every 100 throughout the nation meet the minimum standard of 4½ general hospital beds per 1,000 population. We cannot reconcile ourselves to the fact that over fifteen times more money is spent per year for industrial research than for research and development in medical and allied sciences. Two million dollars more is spent for research in plant and animal disease than for human disease.

People as a whole are concerned with health, and the prevention of illnesses and crippling diseases. Their contribution to the many health agencies proves this point, but at the best, these beneficial agencies operating as individual public bodies, cannot hope to fill the need. Almost weekly we hear the call to contribute to some worthwhile organization concerned with a special disease. Constantly others are entering into this work. It is indisputable that some will be better financed than others but at the best they all are limited.

We are concerned with Mr. Average Citizen whose heart is filled with constant fear of loss of income and the terrific cost of medical attention. When we think of the people next door, or across the street, who through their productive years secured a small home and a meager sum to carry them through the autumn of life, spending their savings and mortgaging their homes to pay the cost of old age, we wonder if nothing better can be provided.

We do not want charity nor sympathy. We do want a sensible plan of prepaying our medical and hospital costs—a program of, by and for American people—an all-inclusive program of benefit to all regardless of their station in life or their geographic location.

Edward T. Foote, S.J., M.A., Regent and Acting Dean, St. Louis University School of Medicine, and Chairman, University Hospital Board, presented the

Meat...

and its Wide Clinical Applicability

That meat is an important component of the high protein diet[1] employed in the treatment of many pathologic states is evident from the following dietary suggestions that have been recommended by some authorities in the field of nutrition:

Protein of good quality and in adequate amounts is the most effective dietary agent for protecting the liver from damage and for promoting its repair.[2] In the long-term management of chronic liver disease, a suggested diet includes at least 4 ounces of lean lamb, veal, or beef in both the noon and evening meals.[3]

Among the nutritional needs of patients with chronic ulcerative colitis is protein.[4] For such patients a recommended diet includes 4 ounces of tender meat with luncheon and with dinner.[5a]

In diabetes mellitus, maintenance of protein reserves is important for supporting well-being and vigor, for maintaining resistance to infection, and, in conjunction with good general management, for minimizing many of the degenerative changes commonly seen in this condition.[6,7] One ounce of bacon at breakfast and 2½ ounces of cooked meat at each of the other two meals are valuable in a diabetic diet.[5b]

A program of treatment[8] found useful in atherosclerosis of the coronary vessels includes an adequate diet low in fat (20-25 Gm. daily) and normal or moderately high in protein (60-100 Gm. daily), in conjunction with lipotropic agents. A sample menu of this diet lists 2 ounces of lean meat at both the noon and evening meals.

Underweight or average weight patients with persistent low blood sugar levels are benefited by a high protein diet providing meat two or three times a day.[9] In overweight patients of this type, lean meat is served at luncheon and at dinner.

During convalescence from infectious disease, the importance of "high protein-high calorie" diets including generous servings of meat deserves emphasis.[10] For this purpose, a suggested typical daily menu schedule which results in weight gain, improved vigor, and a restored sense of well-being furnishes ½ ounce of bacon at breakfast and 3 ounces of meat at each of the other meals. Supplementary feedings may include additional amounts of meat.

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following statement for the St. Louis University School of Medicine:

STATEMENT OF ST. LOUIS UNIVERSITY SCHOOL OF MEDICINE

May I say that I am grateful for the opportunity to present a few comments for whatever usefulness they may serve.

The thoughts presented are representative of those of St. Louis University School of Medicine, of which I am Regent and Acting Dean at the moment. Naturally varied applications of the principles implied would be made by the respective divisions of the University directly concerned with health care education: Dentistry, Nursing, Hospital Administration, Medical Social Service, and the various Health and Hospital Curricula. I am also Chairman of the University Hospital Board, which has medical policy responsibility for the University Hospitals (the St. Mary's Group of Hospitals).

Of the topics assigned by the President for the consideration of the Commission, I wish to center a few remarks about the effects of actions taken to meet military, civil defense, veterans and other health needs upon civilian health care.

These are obvious effects: Such as that the recruitment of medical personnel by various governmental agencies has forced private institutions and agencies toward higher and higher salary expenditures and has depleted the available supply of such personnel. There is the so-called "doctor draft" which up to the present time has had serious direct effects upon residency and indirectly upon internship programs and consequently upon the excellence of medical care in hospitals and upon educational and research activities.

Effects upon intern level medical education include these: That disruption or hampering of residency programs interferes with interns' supervision and instruction as well as the maintaining of the best organization of service units in some hospitals. Furthermore, recruitment of medical graduates for military internships of course aggravates an already existing problem arising because the intern demand of hospitals is far greater than the number of available graduates. We must hasten to add, however, that the policy thus far followed by drafting authorities is to be praised in that the graduate is allowed, if he so desires, to complete the year of internship before his deferment will be discontinued. It is sound thinking which recognizes the importance of regarding the internship as the necessary continuation of the physician's graduate education. Public Law 779 and pressure and, or, enticement procedures toward recruitment of physicians seem to be having one effect which is diametrically opposed to a solution to the so-called doctor shortage problem. At bottom, one of the most significant factors limiting the education of more physicians is faculty shortage. For the development of faculty personnel, particularly of physicians interested in and competently trained in the basic medical sciences, but also of those who would enter academic medicine, it is important that during the three to five years following graduation from medical school, the future teachers be able to proceed with their own further studies and then with the beginning of their teaching and research activities. It is probably, therefore, rather short sighted indiscriminately to deflect every young doctor from this continuation by requiring his military service shortly after internship or its equivalent. There is another effect, to be mentioned later, in terms of the medical orientation of the young graduate under military auspices. Incidentally, although there are other and more basic contraindications to the establishment of medical schools under direct government or military auspices, this should definitely be avoided because it would further exaggerate the faculty embarrassment in the existing schools. The number of schools is being increased as rapidly as is feasible.

Related to the continued maintenance of a desirable standard of civilian health care is the education of students for medicine. Drafting and deferment procedures have in the main been so planned and administered with regard to students entering medicine that there seem to be no untoward effects. Selective Service is to be complimented in this regard. Apt and worthy candidates for medical school have been able to progress through the requisite preparatory collegiate studies and enter medical school without interruption. Another policy which is correct and should surely be continued, is that of leaving the summer vacation periods at the disposal of the medical student, not only because in certain of the schools, instruction continues through the summer preceding the senior year, but also for the psychologic and physical health of the student and for his financial position. Many students depend upon summer earnings to finance their medical education.

It seems not only short sighted but unrealistic to entertain the notion that medical education can without detriment be accelerated. Faculty shortage is one reason; the essential nature of medicine is another. In medicine, the student and teacher alike must preserve and nurture a certain inquiring attitude of mind, a certain thoroughness, a certain interest in advancing medical science itself; a series of crowded semesters or trimesters without interstices may be satisfactory for emergency indoctrination in engineering or tactics or languages, but it hampers formation of the student of medicine into a true physician. The medicine to be learned is more than a body of organized knowledge and even if faculty and students were tireless, accelerated medical education would be of lower quality.

"Maintenance of a desirable standard of civilian health" would seem to depend rather directly upon maintenance of a desirable standard of medicine itself. "Effects of actions taken to meet the long range requirements of military, civilian defense, veterans and other public service programs as well as effects of other actions" may be reaching much farther and deeper than we care to realize in terms of the manner in which they may be modifying medicine itself—not merely one or other pattern of medical practice but whatever that rather difficult to define spirit and genius and attitude is, which qualifies medicine as strictly professional in essence.

Endeavoring to point out that quality or condition or constitution of medicine which must necessarily make it in a sense vulnerable to some of our present procedures, may I briefly institute a comparison between it and, let us say, one of the industries? The plastics industry does not suffer serious or permanent detriment if in a national emergency it should become necessary to divert energies, resources or personnel to meet military needs. Manufacturing methods are not forgotten, the chemistry of plastics remains as scientific knowledge, even though the exact direction of scientific progress and development of practical

applications and of production skills may be modified even for an extended period. The science and the developments are not damaged even though financing and economics change, whether it is the government or an individual who places orders, whether production is item by item or on assembly lines, whether prices are exorbitant or whether the products are given away.

Medicine, as medical science, is not altogether unlike science in commerce or industry. Medical knowledge, conclusions from research, additional medical know-how, diagnostic tools perfected, purely technical skills, are not essentially changed or damaged because an emergency situation requires that they be applied on an assembly line basis or because attempts may be made to sell so-called medical care in job lots. But medicine is more than science and skills. It has its reality, its entity conjointly in physician and patient; it is not just a number of tests and diagnostic judgments; it is not merely the patient's receiving certain therapies, directions, regimes; it includes certain attitudes, approaches, purposes, motivations of both patient and physician. There are quotients of interest and desire for well-being, of confidence and trust and gratitude, elements not unlike friendship. Subjective elements? Psychologic and emotional? Having to do with high evaluation of an individual, a person? Yes—and not for that reason in the least less actual and real and at times a matter of life and death.

Now, since these rather awkward-to-describe features are concreted in the persons concerned, rather than merely in an objective body of knowledges and skills, changes in persons and in their attitudes mean changes in something essential to medicine-in-action.

If then, we note the growing by millions of the total of all the government employees, all service personnel, all veterans, all dependents, and all the others receiving government purveyed medical care, we immediately appreciate that if in this medical practice there is deterioration of attitudes and approaches on the part of patients, you have a tremendous sector of our nation's medicine affected. Add that universal military training will place each young man in contact with such medicine for an important period of his life, and it is evident you realize how the orientation toward medicine of American citizens in general can change. Collectively they will represent what the public thinks of medicine and how Americans regard it in their practical day to day affairs. If medicine comes to be, and as far as they are concerned, a kind of commodity, a service given to them or issued to them as are their uniforms or their food rations, they will soon forget what the traditional private practice of medicine means.

What is said here regarding medicine as the profession, should not be in any sense taken to imply that my purpose is to regard physicians as the chief beneficiaries of the continuation of sound medical practice. One might speak of safeguarding the rights of a position of the officers or the management of an industry and have primarily in mind their own personal position and welfare. I intend to emphasize the importance of the quality of medicine and medical practice itself rather than the advantage of individual physicians. There is no question of a kind of defense of medical men or of the profession as a group or a unit but rather there is a serious question of the preservation of professional medical practice. As has been pointed out, America as public and as patients can forget what medicine really is and has been.

On the other hand, physicians themselves can be changed and the next generation of doctors can be different from that which we have known and respected and have needed. A physician is not formed by the day of his graduation from medical school; so much of his professional orientation is still to be set and developed not merely through a year of internship but through several years following that time whether he proceed with formal education as a resident or whether he enters practice either alone or under the tutelage and with the help and guidance of some senior member of the profession. Thus far, overt pressure has not been placed upon the graduate to spend his internship under government derivative auspices. The same cannot be said with respect to residency training unfortunately.

Whatever the mechanics by which it is accomplished, if the great majority of graduating doctors is required to spend all or a part of the years immediately following medical school or internships in an atmosphere where traditional privately practiced medicine is impossible, it is evident that the next generation of physicians will be in danger of regarding themselves as dispensers of a commodity, as persons who unthinkingly let medical devotedness be evaluated in dollars, who limit their medical responsibilities to a forty hour week.

No, their knowledge, objective medical science may not suffer in these circumstances but they may be less inclined to know the full meaning of devotedness to the sick and to their patients. They may be less sensitive to appeals calling upon their humane love. They may be somewhat more vulnerable to propositions which would today debase their profesession to a mere business basis.

Obviously there are important and serious needs of our men and women in the Armed Services for the best in medical care which can be provided for them. If uncontrollable circumstances necessitate emergency departures from the ideal in the pattern of practice, as for example, at the battlefront, no one worries that either the fiber and tenor of medicine itself will be cheapened or that the serviceman will change his attitude about the assistance a physician can give in health care.

Is it, however, necessary that the government endeavor to supply physician care under its own auspices in all the other circumstances? Let us not for a moment question but that for the great service a G.I. has rendered all of us, it is entirely right that certain advantages be given to him as he reenters civilian life and that among such benefits he as a veteran may well be assisted by having health care provided. There is no question but that geriatrics should be developed and that the aging need health care; but there is serious question whether it is sociologically as well as medically correct to include health care of the aging with the responsibilities of Social Security. Even, however, if it should be sound to include health care, does it follow that the government may try to buy and dispense the physician's care as a staple or as forest conservation? Why, however, is it necessary that the veteran or the aged person have no alternative but to obtain this care in our expanding system of veteran hospitals and from government employed staffs—under government stipulated rules and regulations—with regularized procedures hampering the flexibility and freedom the physician



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must have as he exercises his medical judgment regarding each individual person—with diminished likelihood that the doctor can be personally interested, can take true medical responsibility in a comprehensive manner—Why cannot the financial means be placed in the veteran's hands to enable him to select his private physician just as he might have done before he went into Service? Why could not voluntary and, preferably, locally independent Blue Cross, Blue Shield or health insurance be paid for? It may be a very wise provision that the wife of a man in Service be given maternity care. Why, however, must the government employ obstetricians and purvey the service to her rather than putting the financial means into her husband's hands or hers so that she may obtain medical care as do other mothers? This question is raised not as though either veteran medicine or governmental infant and maternity care is of lower medical quality technically. Surely, we can be proud of the great majority of our veteran hospitals and their staffs in many respects. But the situation encourages acceptance of a kind of medical "dole." It too easily permits development of the attitude of mind in which the citizen feels that medical care is due as a public commodity purchasable with tax money.

A secondary consideration, but a significant one, is that multiplied government medicine is uneconomical financially. It is not a trivial consideration that by a doubling or a tripling or a quadrupling of physician requirements for government medicine, the graduating physicians must look forward not merely to military needs, but also and unnecessarily to three or four times that service which they must give even in peacetime in order that the medical responsibilities which government has chosen to assume may be met. It is not trivial that at this moment residency programs in teaching hospitals have been hampered and, in some cases, seriously damaged; it is not trivial that the alert and interested graduate who might proceed at once toward research and academic medicine, is deflected from this course by an enforced delay. It is not surprising that one of the so-called bottlenecks to increasing the number of schools of medicine is prolonging this period in which insufficient teachers of medicine are available.

It is not inconsequential that our generation, by following lines of least resistance would pass on to our successors a social fabric with tax derived, overly expended "welfare services" such as a medical dole. Expanding government medicine will progressively crowd out more and more the evaluation of assistance in the time of sickness as one of the occasions where human charity and kindness should have play. Philanthropy and the dignity and worthiness of individual human beings are lost sight of.

In contrast, suppose for a moment that for the injured or sick serviceman (once the critical stage of his recovery is passed and it is determined that he will not remain in the Armed Forces), suppose that for infant and maternity care, for dependent care, for nonservice connected disabilities, for the general health care of our army of government employees, financial means were given to individual Americans to provide their own hospitalization as needed and the professional services of physicians; (suppose, too that private philanthropy is further encouraged by tax adjustments), we would not only avoid a number of the dangers just cited but one would find a grass-root development and progress of medicine itself encouraged, private hospitals developed and the personnel requirements for medicine under government auspices as well as construction and operation of government hospitals, drastically reduced. Free enterprise is not only good Americanism, it is good in medicine. Provide for our Armed Forces—yes; for sufficient medical reserves—yes; but beyond that let medicine, let America be individualistic and free.

It is significant, perhaps, that in the Army, the training of physicians at intern and resident level is grouped under recruitment administration. On the face of it, it would seem that, salary offers failing, ranking failing, before outright draft was attempted Army medical direction and the accurate insight to seize upon the fact that attraction would be stronger if to salary there were joined professional development and opportunity. This procedure has merit because, in addition to other reasons, it appeals on medical grounds. Let us not for a moment minimize or cast aspersions upon the technical quality of this medical training or upon the excellent medical science achievements under Army auspices. May we also give well merited praise to the many excellent physicians under whose tutelage and because of whose devotedness, our service personnel receive superior medical attention and under whom there has been excellent training and productive research. The point to be made here is that Armed Forces have apparently had to fall back upon training programs for recruitment purposes, and that the recruitment deficits do not now represent lack of training opportunities in civilian medicine. The present disproportion between the supply of graduating doctors and the much larger demands of approved internships, the present adequacy of satisfactory residency training opportunities in nongovernmental institutions attest that military postgraduate training opporunities are perhaps rather coin to purchase enlistments than medical or military necessities in themselves. It is true that military hospitals in the states can neatly present excellent training opportunities—but this scarcely justifies military responsibility for this medical training, particularly when it places the military in competition with the civilian institution to maintain minimal quotas for the successful conduct of training programs.

The issue is surely not whether there should be medical manpower for service personnel on active duty; the issue should be which professional persons are best suited for this responsibility and which of them can render the service with least total detriment to our nation's total health care needs. Recruitment should be a definitely secondary consideration. If it is better for our service personnel that their doctors be recent graduates, we have one conclusion; but if it is better for the medical attention to be given by those further developed and with some few years of experience, we have quite a different conclusion. It seems unwise to confuse recruitment practicalities with medically based indications. One cannot, and should not, try to separate good medicine—whether civilian or military—from medical education and investigation. But the cart is before the horse when, to get medical service—particularly beyond that needed for active military personnel—educational features are made to subserve recruitment. We have our military for our national defense, not for the development of medicine.

It is dangerous for us to be glib regarding the

directions being set for medicine. "Health needs" is an elastic and equivocal phrase, and the realities for which it stands are relative entities.

Individual opinion can shade the significance of "need" from some sort of possible desirability that each child born shall attain the age of 90 to whatever need there may be for maintaining vigorous physical potential only in citizens who shall be selected as "useful" by some agency. One cannot even eschew the philosophical consideration, if you will, that for some health is a condition of existence and a means or occasion or condition for a certain level of happiness or achievement, while for others, health seems to be set as the goal of existence itself. What then does "need" signify in these divergent concepts?

The health needs of the actually infirm are readily identified. We can say how the care of the sick has been affected by the "actions" to which the President refers. But note how relative and variable are health needs as preventive or prophylactic. A child has preventive medicine needs in a school room which are quite different when he is skating or studying at home. How will one scale the health needs of a boy in a family with scarcely any ideals of decency or responsibility in comparison with those of a little girl sitting across the room from a classmate with a cold. Preventive medicine differs from industry to industry and from one locale to another. Health needs at the level of medical education and research are still more resistant to rigid classification and definition.

There is another set of relativities about "health needs." Mr. Ewing's study of a few years ago did not precisely highlight the fact that even after one subtracts the numbers of persons who would not be given health in the foreseeable future by indefinitely great medical manpower such as some of the accident victims, some congenitally malformed infants, some cancer and cardiac cases, there remain thousands listed in the Ewing report as the sick who need doctors, whose condition would be vastly improved if there were adequate housing, nutrition, family protection and guidance, instruction in basic hygiene, traffic safety and so forth. In other words, their need for doctors is much less acute than their need for other ingredients or conditions for health. These health needs are relative. We must insist upon, encourage and support the most intensive and extensive medical research—so that less and less diseased conditions will have to be classified as beyond helping, so that there may be ever improving preventive medicine. It is not reasonable to deny that there is need for better distribution of medical personnel; I am, however, posing the sober question whether we should glibly seize upon catching phrases concerning "more doctors," "more and better health facilities," whether we should somewhat blindly jump to the possibly gratuitous conclusion that government, and federal government in particular, must produce more physicians, must attempt a "sickness tax" monstrous enterprise—when we are failing to take the obvious steps to improve health and extend life which are within our grasp regarding housing, nutrition, instruction, safety. For some of these measures, public health activities and responsibilities are necessary; and these are very often adequate at local community levels.

I note that the President, in assigning the charge to the Commission, Mr. Chairman, has written that in considering the extent of government services in the health field and the desirable level of expenditures, he mentions "taking into consideration other financial obligations of government." Here, again, whatever is entered on our list of health needs, the practical conclusions and recommendations are to be tempered, apparently, in view of governmental resources. It would seem that caution is necessary lest we forget that needs are relative, and that for the tremendous assignment of the Commission, there must at least implicitly be established some master scale of values—some means of judging priorities. If we wish to adhere doggedly to our American fiber of individualism, and thus keep consideration realistically concreted and practical by looking to the health of this civilian and that soldier, we should really have to know what is objectively more important in the life of each one who has the health care needs.

Another observation anent the phrase written by our President is this: Does it imply that the Commission has not only to evaluate what health needs are and how great or small they are, but also what other needs there are which entail financial obligations of government? If a year is a short period for this step because of the complexity and especially because of the seriousness of the subject, it is surely inadequate if health values and needs are to be cast against the background of all our national exigencies for comparison.

A practical conclusion to draw upon this mention of the difficulty in appraising precisely what "needs" should mean, is that statistical compendia will not supply basic and reliable answers to assist our government in charting the course of its actions regarding the health of the nation. As many of the previous remarks imply, thoroughgoing consideration of medicine as a profession is one requisite and a basic philosophy regarding the responsibilities of the government in this area is a second requirement.

According to the President's executive order establishing the Commission, recommendations for governmental action, either legislative or administrative, are to form a part of the report to be submitted. Passing over the disproportion between the time allowed and the seriousness of the problems of health care in America, one realizes that the Commission can do great service to the health of individual Americans, both civilian and military, if it might find it appropriate to offer a few directive recommendations which might have some effect in reversing certain trends by modifying governmental action: (1) No matter how attractive and expedient it may be, the health care of individual Americans is far too precious a thing to be tossed about as a political bon-bon or toy or cudgel; governmental agencies might simply omit initiating actions which increase the likelihood of medicine's being dragged into politics; medical care for the aged or for those receiving old age compensation is probably not a good thing for the Federal Security Agency to propose in these days; (2) effort might be expended in devising the necessary administrative machinery to permit dependent, nonservice connected disability, and perhaps veteran health care in general to be obtained by individuals and individual families with only the financial means emanating from governmental agencies; (3) the medical profession and the schools of medicine and, to some extent, the hospitals, could be proposed as the ones to select the most apposite period of the physician's life

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From where I sit
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Towards the end of the evening, she had the ladies really battling for anything she put up. "What am I bid for this woman's lovely black coat here—good as new? Who'll say ten dollars?" she asked.

Granny held the coat up, and commenced describing the lining, sleeves, buttons—really "selling hard." Then, suddenly, she took a *close* look and blurted out "Land sakes, no more bidding—this is *my own* coat!"

From where I sit, what almost happened to Granny was good for a laugh, but sometimes when people "get carried away" with their own talk it's not so funny. Like those who would tell others how to practice their profession . . . like those who would interfere with my right to a temperate glass of beer. I suggest we hold on to our opinions—and believe in them—but take a close look at them before we try to "sell" them to our neighbor!

Joe Marsh

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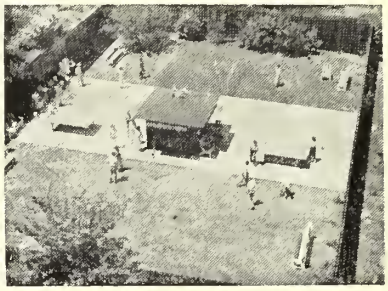
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wherein he might interrupt serving his country by serving civilians with his service to those in our Armed Forces; (4) having available to it by the President's order all the information and assistance which may be supplied to the Commission by all the executive departments and agencies of the federal government, having access to all the data and studies of the American Medical Association, having the Hospital Associations and other health service groups to call upon, the Commission can certainly perform a substantial service by comprehensive review and compilation of all data bearing on its subject. It is respectfully suggested, however, that the greatest service the Commission could render at this time would be for it to recommend a more adequate consideration of medicine as professional as a basis for all future governmental planning and action and to recommend that the professional thought of physicians, dentists, nurses and those in the allied health professions be allowed to predominate over political and nonprofessional administrative planning.

William H. Bartleson, Executive Secretary, Jackson County Medical Society, made the following report for that Society:

STATEMENT OF THE JACKSON COUNTY MEDICAL SOCIETY

My name is William H. Bartleson. I live in Kansas City, Missouri, and am Executive Secretary of the Jackson County Medical Society.

The invitation to Jackson County Medical Society to participate in this hearing is appreciated, and the members of the Society are grateful for the opportunity to have this information presented to the Commission. They trust that it will be found valuable.

It is difficult, extremely so, to recommend a solution or plan of solving all of the problems of medical care for over one million people who reside in the Greater Kansas City trade area in the short time allotted. Therefore, this presentation will be brief and factual. Substantiating data will be submitted for the future review and study of the Commission. We shall try to confine our material to Jackson County, Missouri, but the intercourse of medical care in the Greater Kansas City Area must sometimes be taken into consideration. In these remarks, Greater Kansas City is the four county area, Metropolitan Kansas City is the two Kansas Cities. Kansas City relates to Kansas City, Missouri, which is in Jackson County, Missouri.

The number of physicians in Jackson County is shown on Schedule No. 1. This must take into consideration those who are practicing as Doctors of Osteopathy, in addition to those who are practicing Doctors of Medicine. The ratio of doctors to the population of Jackson County is one for each 450.

There are in Jackson County 3,403 general hospital beds. The detail of these figures is shown on Schedule No. 2. On the basis of this information, and the population of Jackson County of 541,000, there is a bed ratio of 6.25 per 1,000 population. In addition, there are, exclusive of nursing homes, 291 beds in special service hospitals. These beds are shown by Schedule No. 2A.

From Schedule No. 2, the beds available for medically indigent and marginal patients are shown by the beds listed for General Hospitals No. 1 and 2, and the Jackson County Hospital.

Schedule No. 3, attached, is a study by the Community Studies, Incorporated, showing the utilization of the general hospital beds of Greater Kansas City by the population in areas beyond Kansas City. It is classified by illnesses. This demonstrates that many cases of major surgery are brought to Kansas City hospitals from outside the metropolitan area.

The facilities for medical care of the marginal group and medically indigent of Jackson County are developed around the programs of the Health Department of Jackson County and the Division of Health of the City of Kansas City. There must be considered the facilities of the Outpatient Department of the University of Kansas Medical Center, which augments the services provided by the governmental units of Jackson County mentioned. Again, we refer to Schedule No. 2 for the number of hospital beds available for these services.

There are sixty-eight physicians on the House Staff of General Hospital No. 1 and 2. In addition, the services of these hospitals include a Visiting Staff of 250 from the practicing physicians of Jackson County.

Clinics are provided for the care of these patients at the Jackson County Health Department in Independence, Missouri, the Alfred Benjamin Dispensary, the Richard Cabot Clinic, The Children's Mercy Hospital and the majority of the load at the General Hospitals No. 1 and 2.

In Schedule No. 4, which is submitted for the information of the Commission, there is a report from General Hospital No. 1, Number 2, and the Leeds Tuberculosis Hospital. This supplies statistical information concerning the number of patient visits, the type of cases seen and hospitalized, along with pertinent data about the operation of the hospitals. The yearly average hospital census is about 70 per cent, however, in 1940 and 1941, this was about 85 per cent. The statistical report of the Health Department of the City of Kansas City, containing a comparative analysis of the ten years, 1940 to 1950, with the addition of penciled figures for the years 1951 and 1952, is submitted as Exhibit No. 1. This report supplies financial data covering the cost of operating the hospitals, which is not contained in Schedule No. 4.

Schedule No. 5 contains copies of the statistical reports supplied by the Clinic of the Jackson County Health Department at Independence, Missouri, containing information about the number of patients seen and type of cases brought to the attention of the Clinic.

Schedule No. 6 is submitted and contains information about the number of patients receiving medical care at the Jackson County Hospital for the previous year.

Exhibit No. 2 is the 1951 report of the County Auditor, containing financial information about the operation of the Jackson County Health Department, the Clinic at Independence, Missouri, and the Jackson County Hospital.

Exhibit No. 3 is the 1952 budget of Jackson County which contains information of the operation of the Health Department from the Health Fund, which is shown in Section No. 2 and appears on pages 60 to 65, inclusive. This budget, you will note, is for over $200,000.00.

Schedule No. 7 contains the Jackson County Auditors's Report for the month of August, 1952, which includes the report for the year to date on the disbursements from the Health Fund. You will note from this report that the appropriations for the Health

Fund since the approval of the budget have been adjusted upward to a total of $328,299.00.

The economic circumstances of the people of Greater Kansas City are good because of employment conditions, salaries and wages. Exhibit No. 4 is the publication of the United States Department of Labor, Bureau of Employment Security, "The Labor Market and Employment Security for June, 1952." We direct the Commission's attention to page No. 71 where Kansas City is shown. The report indicates Group 2, which is quoted as follows: "Areas in which current and prospective labor demand and supply are approximately in balance."

Exhibit No. 5 is the publication of the Kansas City Chamber of Commerce, "Kansas City Offers Industry." We refer you to page No. 4 where the total employed is shown as 340,300 persons, which is an increase of 32 per cent over total employment of 257,767 in 1940. You will note that this is in Metropolitan Kansas City, and is not limited to Kansas City, Missouri. We also direct your attention to page 6 of Exhibit No. 5, where you will note that the total cost of the city worker's family budget in Kansas City is $3,960.00 per year, which is less than the cost of thirty-two cities in a study of thirty-four cities shown on this page.

We also submit the editorial from the *Kansas City Star*, "Time of Plentiful Jobs," Special Edition of Sept. 12, 1952.

Exhibit No. 6 is the "Occupation Wage Survey, Kansas City, Missouri," October, 1951, Bulletin No. 1064, of the United States Department of Labor, Bureau of Labor Statistics. This exhibit will provide the Commission with information about the wages paid to employed people in Kansas City, Jackson County, and will demonstrate that these wages are average, or above, indicating that employed persons have an income which is comparable to that available in other areas for like and similar work.

The introduction of the above exhibit relating to economic conditions in the community and employment of the population is to demonstrate that the availability of employment and the wages paid to employees provide an opportunity to obtain medical and hospital services, either by enrolling in voluntary programs or by benefits through programs under labor contracts, or by securing the services direct, in the event the employed individual has not availed himself of any of these plans.

Exhibit No. 9 is "Hospital Services from the Standpoint of the Consumer," several graphs produced by Community Studies, Inc., relating to the hospital services of Greater Kansas City.

There are no consolidated figures available, either for Jackson County or the Kansas City Metropolitan Area, showing the number of people covered under voluntary hospital or medical care programs. An investigation among private firms who write these contracts produces the opinion that the percentage of employed people covered will compare favorably with other metropolitan areas, and will probably be above the general average. It is estimated, conservatively, that there are 600,000 persons covered in the area of Greater Kansas City.

The Blue Cross plan of this area started in 1938, and the Blue Shield plan in 1943. Enrollment has increased in these to 330,143, and 301,293, respectively, as of December 31, 1951. Direct enrollment programs have been used in addition to a plan with the Missouri Farm Bureau Federation to make them available for more people. Also, there have been community enrollments in small cities and villages for the benefit of rural populations.

The rates of the plans have increased; however, the comparison of the rate increases with benefits is in the member's favor. The rates, as compared to other cost increases and wage increases are favorable to the members. These rates are within the financial ability of employed people of the area in consideration of wage rates existing, as shown by Exhibit No. 6.

More extensive coverage of federal employees could be achieved and greater benefits could be made available to them if the federal government would make payroll deductions permissible for the purpose of paying memberships in voluntary plans.

Exhibit No. 7 is submitted, which is the 1952 Annual Report of Blue Cross and Blue Shield of Kansas City. We refer you to pages 7 and 8, containing membership data. Exhibit No. 8 is submitted, which contains additional information about the Blue Cross and Blue Shield plans of Kansas City.

In closing, we should like to again express our appreciation, and to further state that for over 100 years the history of Jackson County shows that the medical profession of Jackson County and of Kansas City, Missouri, has attempted to fulfill its responsibility to lead in providing the best in medical and surgical services to the people of the Greater Kansas City Area, and to encourage community and local governmental cooperation. This has produced a continuous and steady increase in the facilities for hospitalization and medical care of all people, regardless of economic circumstances, race, creed or color. It has also encouraged the participation in voluntary prepaid programs of insurance companies and labor groups, as well as the Blue Cross and Blue Shield plans. Thank you.

COUNCILOR DISTRICT NEWS

THIRD COUNCILOR DISTRICT

R. O. MUETHER, M.D., ST. LOUIS, COUNCILOR

Edward L. Bortz, M.D., Philadelphia, delivered the Fifth annual Alphonse M. Schwitalla lecture, sponsored by the Beta of Missouri Chapter of Alpha Omega Alpha Honorary Medical Society on October 16. Dr. Bortz' subject was "The Schwitalla Touch in American Medicine."

SIXTH COUNCILOR DISTRICT

R. W. KENNEDY, M.D., MARSHALL, COUNCILOR

Dedication of the new twenty-six bed Windsor Hospital was held on September 20 and the hospital was opened on October 1. Among speakers at the dedication was D. P. Dyer, M.D., Sedalia.

SEVENTH COUNCILOR DISTRICT

VICTOR B. BUHLER, M.D., KANSAS CITY, COUNCILOR

Jack M. Davis, M.D., Kansas City, addressed district No. 4 preschool group in Blue Springs on September 25. His subject was "Polio and Your Child."

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Edward H. Hashinger, M.D., Kansas City, was the principal speaker at a ground breaking ceremony for a new hospital at Olathe, Kansas, on September 8.

NINTH COUNCILOR DISTRICT

J. H. SUMMERS, M.D., LEBANON, COUNCILOR

South Central Counties Medical Society

The South Central Counties Medical Society met for dinner at the Antlers Cafe, Mountain Grove, September 17, with the following members and visitors present: Drs. J. W. Connor, S. W. Chambers, R. W. Denney and A. C. Ames, Mountain Grove; Garrett Hogg, Jr., Cabool; S. G. Kramer, Houston; Leslie Ran-

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dall, Licking; M. B. Perkins, Willow Springs; Rollin H. Smith and E. C. Bohrer, West Plains; Thomas E. Ashley and James T. Good, Springfield, and the wives of several.

After dinner the ladies went to the home of Mrs. Connor for the evening.

The meeting was called to order in the office of Dr. Connor.

Dr. Ashley spoke on "Varicose Veins" and Dr. Good discussed "Hypertension." Both were thanked for the Society by Dr. Connor, the president.

The application for membership of J. W. Case, M.D., West Plains, by transfer from the Pulaski County (Arkansas) Medical Society, was presented and he was elected to membership.

The meeting adjourned to meet in Cabool on October 22.

A. C. AMES, M.D., Secretary.

BOOK REVIEWS

BRUCELLOSIS (Undulant Fever), Clinical and Subclinical, by Harold J. Harris, M.D., F.A.C.P., with the assistance of Blanche L. Stevenson, R.N. Foreword by Walter M. Simpson, M.S., M.D., F.A.C.P. Second edition, revised and enlarged. With 111 illustrations, 12 in full color. Paul B. Hoeber, Inc., New York. 1950. Price $10.00.

This monograph on brucellosis represents a second edition in which the first edition has been completely revised and amplified to a great extent.

The author presents this monograph in a standard textbook fashion, beginning first with an introduction to the problem of brucellosis with reference to the historical significance of the disease followed by nomenclature, definition and terminology. There then follows the chapters on etiology, epidemiology, pathology, symptomatology and diagnosis; the last portion of the book devotes itself to the prognosis and treatment with a final chapter on phophylaxis.

There is an adequate bibliography present at the end of the book to include an index of authors as well as subjects.

The book is well written and wherever possible, the author has been as dogmatic as one might be pertaining to such a protean disease as undulant fever.

The book can be used as a standard reference by one inasmuch as it is conveniently divided into separate chapters, each one complete in itself. A. E. U.

SAW-GE-MAH (Medicine Man) by Louis J. Gariepy, M.D., Northland Press, Saint Paul, Minnesota. 1950. Price $3.00.

The "Medicine Man" is interesting in that it carries the reader throughout the life of a fellow doctor.

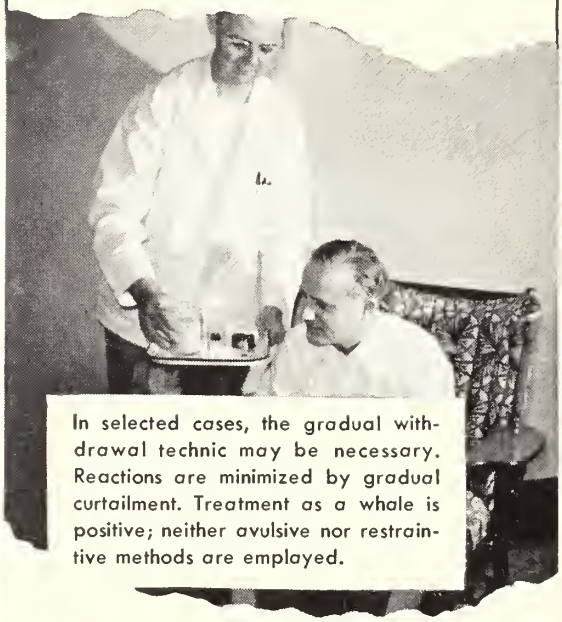
The early part of the book is by far the most entertaining because of the much more vivid description and characterization which are lacking in the latter half. Both the druggist and Doctor Adam's mother add to the early part of the story.

It was a pleasure to read the book because Doctor Adams is confronted by most of the problems that confront any physician, and all like to picture their lives a crusader such as he was. The book would benefit from stronger characterization and greater attraction to small detail.

All in all the book is both easy and enjoyable reading, especially to a physician. B. Z. H.

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General Surgery, One Week, starting February 9.
General Surgery, Two Weeks, starting March 30.
Fractures & Traumatic Surgery, Two Weeks, starting March 2.

GYNECOLOGY—Intensive Course, Two Weeks, starting February 16.
Vaginal Approach to Pelvic Surgery, One Week, starting March 2.

OBSTETRICS—Intensive Course, Two Weeks, starting November 3, March 2.

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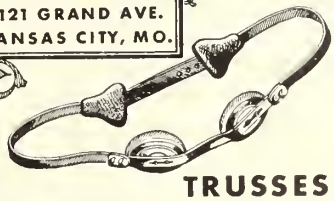
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Address all communications to The Journal of the Missouri State Medical Association, 623 Missouri Theater Building, 634 North Grand Avenue, St. Louis 3. Telephone: Newstead 0404-0405.

Subscription: $3.00 per year; 40 cents per copy.

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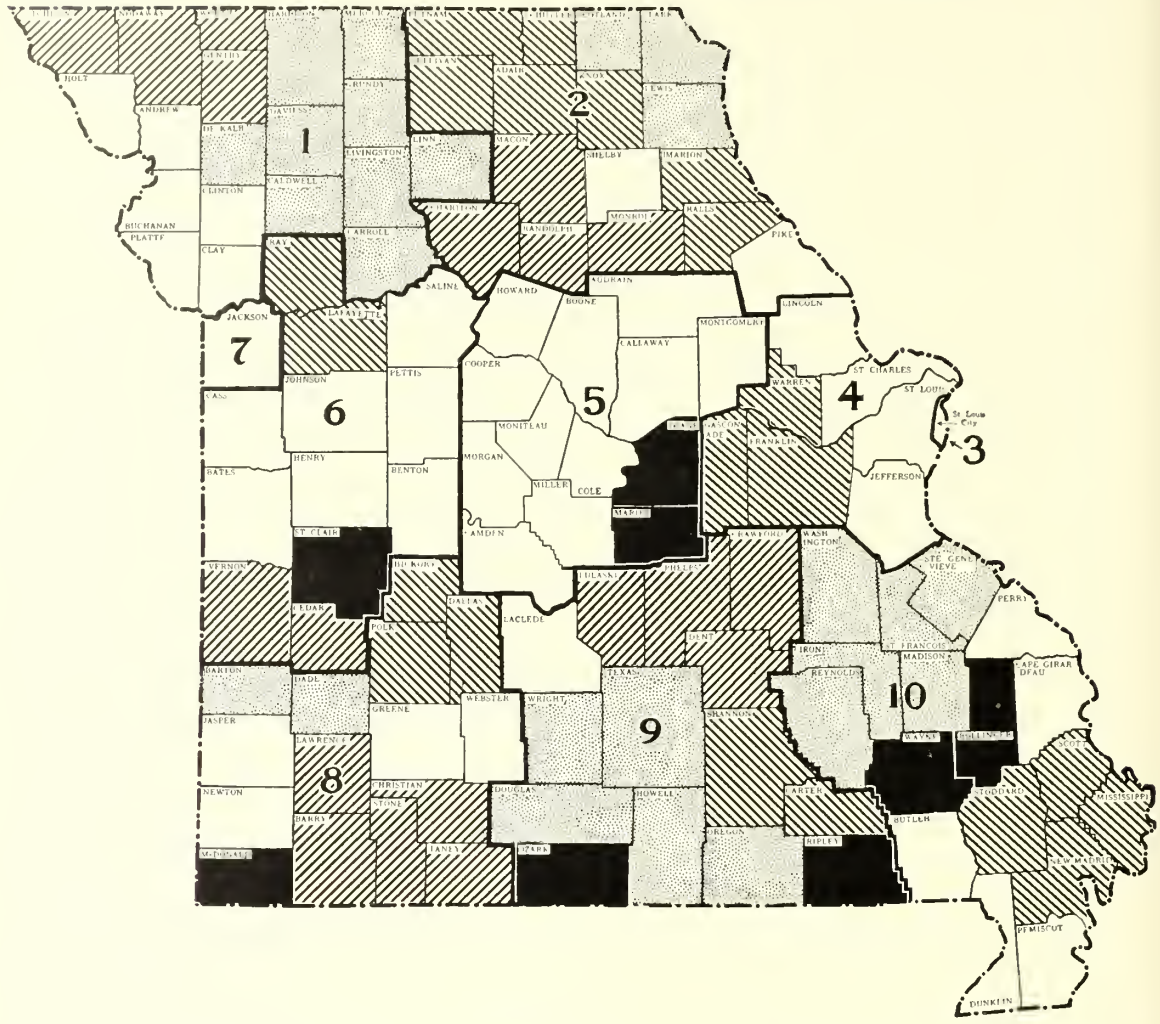
Ward, E., Slocumb, C. H., Polley, H. F., Lowman, E. W., and French, P. E.,
Proc. Staff Meet. Mayo Clin. **26**: 361, Sept. 26, 1951.

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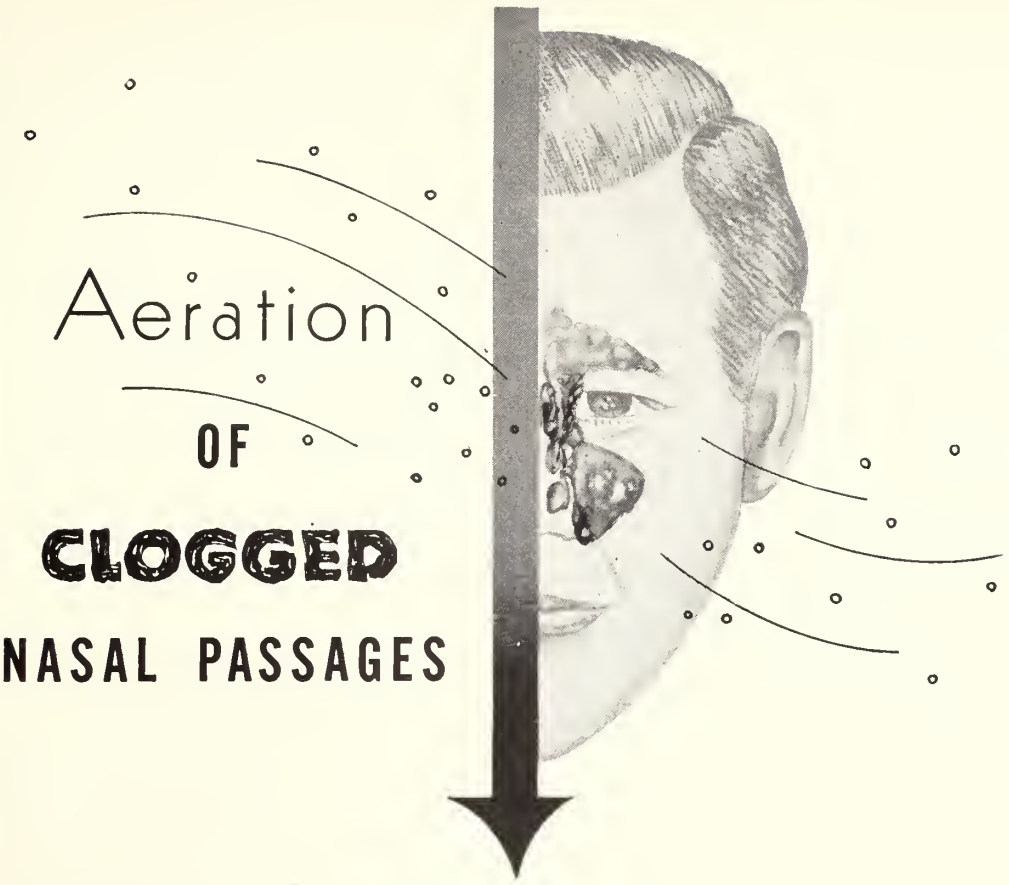
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1. Von Alyea, O. E., ond Donnelly, Allen: *Arch. Otoloryng.*, 49:234, Feb., 1949.

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Average normal values for hemoglobin are given as 19.0 $\frac{\text{plus}}{\text{minus}}$ 5 grams per 100 cc. in the first 3 days of life, gradually decreasing to 12.2 $\frac{\text{plus}}{\text{minus}}$ 2.3 grams by the fifth month, average of 11.2 grams by age one year, rising to 13.4 grams by adolescence, and in adulthood averaging 14.0 $\frac{\text{plus}}{\text{minus}}$ 2.0 grams for women and averaging 16.0 $\frac{\text{plus}}{\text{minus}}$ 2.0 grams in men.

Custer, R. Philip, *An Atlas of the Blood and Bone Marrow*. W. B. Saunders Co. 1949, p. 28.

Pathologically Speaking

HEMOGLOBIN DETERMINATION

THE estimation of hemoglobin constitutes a basic laboratory procedure of utmost importance. Hemoglobin, an iron-containing protein, is a vital agent in maintaining life, for it is the means whereby all cells are supplied with oxygen necessary to carry on various metabolic reactions.

The estimation of hemoglobin is a very important laboratory procedure as it varies widely in disease. The procedure is of value in routine survey, in disease, in following response to therapy, and it is a "must" prior to surgical intervention with general anesthesia.

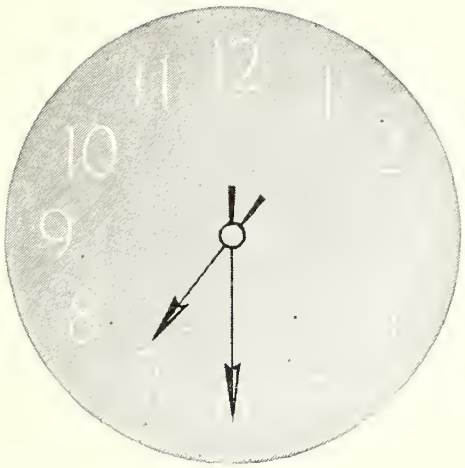
The laboratory determination of hemoglobin is usually done on a colorimetric basis as spectroscopic and chemical procedures are for research laboratories. The colorimetric estimation offers several problems which the clinician should appreciate from clinical appraisal of reports.

There are numerous methods available for estimations, however, and the normal values for various methods will vary from 13.0 to 18.0 grams per 100 ml. Hence normal value for 100 per cent is at variance and will depend upon the method used. The per cent of error will vary as much as 30 per cent in some simple methods, 4 to 8 per cent by visual colorimetry, and 1 to 2 per cent by photocolorimetric procedures.

The hemoglobin is reported in grams by some laboratories and in per cent by others; the former is definitely the reading of choice since only when recorded in grams per 100 ml. of blood does the value have meaning. If it is reported in per cent, one must indicate the method used and the normal for that method. This would lessen confusion which exists at the moment.

Hemoglobin values will vary with the age and sex of the patient. The clinician should interpret a hemoglobin report and evaluate it in the light of the above stated facts, and of course, should correlate it with the clinical picture. The level at which anemia is said to occur is arbitrarily set at 12.0 grams per 100 ml. of blood.

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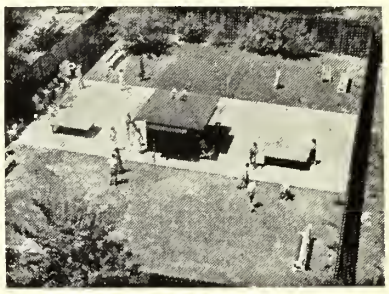
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BOOK REVIEWS

PEPTIC ULCER. David J. Sandweiss, M.D., F.A.C.P.— Associate Attending Physician, Division of Internal Medicine, Harper Hospital, Detroit, Michigan. (Published under the Auspices of The American Gastroenterological Association.) W. B. Saunders Company, Philadelphia, Pa., publishers. 1951. Price $15.00.

This volume of almost 700 pages is a monument to the industry of its editor whose job it was to correlate the work of the seventy-seven authors who wrote the book in sixty-four chapters, each on a different aspect of peptic ulcer. The almost impossible task of preventing or even minimizing duplication was accomplished to a high degree indeed, considering the number of contributors and the close affinity of many of the subject headings.

While the basic sciences and pertinent experimental work are treated generously, the practical aspects of the ulcer problem dominate the book; it is, in fact, a fine illustration of the idea that nothing is as practical as fundamental knowledge.

The book is almost exclusively a reference volume. It is difficult to read much of it at any one time; this reflects the only valid criticism of the book: it is too much divided. Most readers will agree that the following four chapters could have been written as well or better by one man than by six men: Chapter 29. "Medical Treatment," George B. Eusterman and Maurice H. Stauffer; Chapter 30. "Dietary Management of Peptic Ulcer," Clifford J. Barborka; Chapter 31. "Drugs Commonly Used, and the Mechanism of their Action," J. Edward Berk; Chapter 32. "Restrictions in the Use of Tobacco, Alcohol and Coffee," H. Necheles and M. M. Kirshen. There are other similar unnecessary divisions.

It is, however, a first rate job of making easily available to the busy doctor a large quantity of basic and useful information on one of the commonest of basic and useful information on one of the commonest and most important problems in every day practice. B. L. S.

ADVANCES IN INTERNAL MEDICINE. Editors: William Dock, M.D., Long Island College of Medicine, Brooklyn, N. Y. and I. Snapper, M.D., The Mount Sinai Hospital, New York, N. Y. Associate Editors: Tinsley R. Harrison, M.D., Medical College of Alabama, Birmingham, Ala.; Chester S. Keefer, M.D., Evans Memorial and Massachusetts Memorial Hospitals, Boston, Mass.; Warfield T. Longcope, M.D., Cornhill Farm, Lee, Mass.; J. Murray Steele, M.D., Goldwater Memorial Hospital, New York University Division, Welfare Island, N. Y. Volume IV. 1950. Year Book Publishers, Inc., 200 East Illinois Street, Chicago. Price $10.00.

This volume is a collection of monographs and review articles by fourteen authors, each a well qualified student of the subject assigned. Subjects discussed are nitrogen mustards in the treatment of neoplastic diseases, brucellosis, neuromuscular diseases, sodium depletion therapy, the use of anticoagulants, hepatitis and cirrhosis of the liver, hepatic tests, the vascular physiology of hypertension and the use of radioactive isotopes in medicine. Important investigative work is reviewed. There is a cumulative index which integrates the subject matter of this volume with the preceding three volumes. This book should serve as a valuable reference work. R. V. P

THE JOURNAL

OF THE

Missouri State Medical Association

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Volume 49 December, 1952 Number 12

Scientific Articles

SURGICAL TREATMENT OF ACUTE AND CHRONIC HEMORRHOIDS

R. F. ELKINS, M. D.
SPRINGFIELD, MO.

THE PURPOSE OF this paper is not to consider the etiology or the pathologic conditions of the acute and chronic hemorrhoidal masses but rather the definitive, surgical treatment of both.

It has been truly stated that a physician cannot fully appreciate the pain and discomfort of hemorrhoids until he himself has experienced the pangs of congestive swelling in the anal region. This is indeed true. Congestion or inflammation of any type in the anal canal can cause distress both in the nervous and gastrointestinal systems. I am sure that all who have experienced such will agree with me.

In the treatment of external, thrombotic hemorrhoids I wish to point out a few important, surgical facts. Here, I mean true, discreet, external, thrombotic masses involving one or more of the perianal quadrants and distinctly external to the anal mucosa. Soft, yet moderately painful and discreet, masses should be treated palliatively with anesthetic ointments and hot sitz baths. Even small injections of a longlasting anesthetic are of great value in relaxing the underlying sphincters and tissues. These usually subside without further distress or treatment. If the external, thrombotic areas are large, firm and exquisitely painful, surgical excision is indicated even before ulceration or hemorrhage has taken place. The surgical treatment consists of the injection of a local anesthetic and complete excision of the thrombotic mass. The main suggestion is for complete excision. Do not leave extensive, redundant tissue and bleeding points. Excise all tissue over the thrombotic area and control all bleeding points by ligature or suture and leave a smooth, tight area. It is unhappy for both patient and physician to learn that the following twenty-four hours reveal a thrombotic area larger and more painful than the first. I am sure all have had this experience. Do not be conservative. Excise widely and completely as far as the external area is concerned. If there is evidence of acute or chronic congestion or thrombosis in the anal canal in association with the external, thrombotic hemorrhoids, it is well to remember that simple excision of the external area is unlikely to cure the patient or alleviate the pain. This cannot be accomplished until the internal, as well as external, areas are excised. Do not misjudge the edema of the perianal tissue as external hemorrhoids thereby resorting to incision or excision or trying to replace the swollen tissues within the anal canal. Such procedures only lead to increased pain, complications and the loss of the patient's confidence in the physician. The latter condition should be taken care of as a major procedure, which I will describe later. The anesthetics of choice for excision of discreet, external, thrombotic masses are the use of 1 per cent novocain as the primary injection and followed usually with 5 cc. of either a long lasting anesthetic in oil such as Zylcaine (Abbott) or the new, nonoily, water miscible solution, Efocaine (E. Fougera). Closure of the skin and mucosa is best done by using number 00 plain catgut on an atraumatic needle.

For the complete excision of both acute and chronic, external, internal hemorrhoids I wish to describe the Fansler technic. The anesthesia of choice may be either low spinal, caudal, Sodium Pentathol or one of the inhalation types. Local anesthesia cannot be used without difficulty and pain.

The Fansler technic was originated some years ago by Dr. Walter A. Fansler, of Minneapolis, Minnesota, and depends fundamentally upon the use of the surgical anoscope devised by him. The scope is three and one half inches in length and one and one fourth inches in diameter with a three quarter inch wide longitudinal opening along one side. A long handle is situated opposite the longitudinal opening and the scope is easily and steadily held in position by the assistant. A rounded obturator completes the scope and makes

Presented at the 94th Annual Session of the Missouri State Medical Association, March 30-April 2, 1952, St. Louis.

for easy insertion into the anorectal region. When the obturator is removed the anorectal tissues protrude into the longitudinal opening as each quadrant is examined and surgery accomplished.

The patient is placed in the jackknife position upon the operating table and the buttocks are held apart by the use of adhesive tape, pulled laterally, and fastened to the side of the table. A total of 10 cc. of either Zylcaine or Efocaine is injected in the perianal quadrants and thoroughly massaged into the tissues to avoid pooling. The injection is best made before any examination of the anorectal area is done in order to avoid contamination of the skin before the injections.

The anorectal area is cleansed thoroughly with gauze saturated with witch hazel which is inserted into the rectum through an examining type of anoscope. A careful, digital examination is then done to discover any existing disease which may have been missed during previous examinations.

The Fansler scope is then inserted, the obturator removed and a careful study of all four quadrants is made. The scope allows for clear visualization and study of all anal and rectal tissues and the evaluation of the existing pathologic conditions can be made quickly. In the complicated and uncomplicated routine cases of external, internal hemorrhoids, removal is made from all four quadrants and the technic is as follows: The redundant and hemorrhoidal tissues of each individual quadrant are swept into the lumen of the scope using a curved, Kelley hemostat. A full length, number 00 plain catgut on an atraumatic needle is then sutured through the rectal mucosa just proximal to the internal, hemorrhoidal mass. The suture is triple tied and the distal end of the suture is fastened into the towel drapes so as to be out of the way until needed. An Allis forcep is attached to the skin about two inches from the anal opening so as to place the tissues on tension.

The redundant, external tissue is then picked up and a small, longitudinal incision is made at the junction of the redundant and fixed skin. Small, curved scissors are inserted into this incision and carefully pushed forward, going between the mucosa and sphincter muscles. By opening and closing the blades the vascular and fibrotic tissues above are separated from the muscle below and the scissors are carried forward to the primary knot of the suture. The tissues, thus seperated, are then incised from the primary incision to the suture knot. All vascular tissue beneath the mucosa is then excised. A portion of the external skin and anorectal mucosa is excised if so abundant as later to cause a redundancy.

When this point of procedure is reached in the right lateral quadrant the pectinate line can be visualized clearly in most cases and incised. The suture previously tied is then used to close the mucosa and skin. Bleeding points are either controlled with separate ligatures or by careful locking of the continuous suture. Just distal to the superficial, external sphincter a deep suture is taken and the continuous suture is tied. This is done to close off the internal area and so prevent the possibilities of a superficial fistula. The skin is then closed tightly by interrupted sutures, carefully approximating the skin edges. No need has been observed for leaving the skin open for drainage as is done in other procedures and the time of healing is definitely shortened.

Each quadrant is treated in the same manner except for the posterior one, in which a racquet shaped skin incision is made and the skin and anorectal mucosa are dissected cephalad down to the primary suture knot. The technic is the same except that the skin tab is excised and the mucosa is sutured transversely to the distal margin of the external sphincter when reached with the continuous suture. The fibers of the pectinate line and the external sphincter are incised in this quadrant if the sphincters were previously found to be spastic and hypertrophic. A pectinotomy is done in one or more quadrants in all cases to bring about relaxation and promote healing.

Small, secondary, hemorrhoidal masses are then looked for and if found are excised and sutured. One or more pledgets of Gelfoam is inserted into the anal area and a small, gauze dressing, held in place with adhesive tape, is applied.

Postoperative medication for pain is usually necessary in small doses because of the use of the long lasting anesthetic preparation and also the avoidance of suturing into the sphincteric muscles in the closure. Liquid diet is given for the first two postoperative days and soft diet on the third. Mineral oil, ounces 2, is given on the third night and a saline enema is ordered for the following morning. The patient is up on the second day and leaves the hospital on the fourth. Hot, saline packs are used while in the hospital and hot, sitz baths advised after returning home.

The procedure and technic described has resulted in uniform and gratifying results in a large series of cases and the use of this technic in the acute, severe and extreme conditions certainly warrants the knowledge of such a procedure. There have been no cases of anal stenosis occurring from this procedure and this is due to the straight, longitudinal incisions which are made definitely in the long axis of the bowel by the reason of the steady fixation of the scope and also because sufficient mucosa remains between each incision. Likewise, because of the protection of the sphincters, no cases of incontinence have occurred. Digital dilatations have been found to be unnecessary and delete a painful procedure. Postoperative bleeding is infrequent and should not occur if meticulous surgery is done as the operative field is completely visible. The distinct visibility of undistorted tissues allows for the

exact diagnosis and excision of all pathologic, anorectal tissue.

In summary, definite suggestions have been given for the surgical treatment of acute, thrombotic, external hemorrhoids and the Fansler scope and technic has been described for the definitive, surgical care of both acute and chronic, external, internal hemorrhoids.

DISCUSSION

FREDERICK B. CAMPBELL, M.D., Kansas City: Dr. Elkin's paper on the treatment of hemorrhoids embodies sound principles of surgical management. The method of hemorrhoidectomy which he advocates has given satisfactory results in his hands and would be equally effective if used by another with comparable surgical experience.

Several other methods of hemorrhoidectomy have been described which also give good results. Therefore, the basic factor in all methods is the complete removal of all hemorrhoidal varicosities and final results are determined by the care with which the surgery is performed. In other words, any method of hemorrhoidectomy thoroughly and carefully executed results in a cure when hemorrhoids are the only pathologic condition present.

One should not forget, however, that in a large percentage of cases one is dealing with anorectal diseases of which the hemorrhoids are only a part. For the want of time, Dr. Elkins has limited his paper to a discussion of hemorrhoidectomy but, to keep the picture clear, one should not fail to emphasize the importance of related pathologic conditions. One should think in terms of doing anorectal surgery rather than a hemorrhoidectomy. The treatment of related conditions may mean the difference between a satisfactory and an unsatisfactory result. For example, one might thoroughly remove the usual group of hemorrhoids and leave a prolapsing rectal mucosa which may soon produce the same obstructive symptoms as internal hemorrhoids. A method of exposure which permits extension upward of the incision to include a section of prolapsing mucosa well above the hemorrhoidal area may prevent this complication which, to the patient, is a recurrence of the hemorrhoids.

One should also remember that a simple hemorrhoidectomy may not entirely correct the dysfunction resulting from chronic infection. Infection is an important etiologic factor in hemorrhoidal formation, but chronically infected rectal glands at the mucocutaneous junction, often termed crystitis, may also result in fibrous stenosis, fissure or fistula. Best surgical results require recognition of related pathologic condition and its correction.

Dr. Elkins has rendered a service in reporting a method of hemorrhoidectomy which the test of time has proven effective.

JACOB STOLAR, M.D., St. Louis: First, I would like to congratulate Dr. Elkins for a clear and lucid presentation on the technic for radical excision of hemorrhoids. And certainly I would not care to take issue with such an authority on the subject as Dr. Fansler. However, it has been stated frequently by well known proctologists, and I would like to reiterate it this afternoon: Learn one of the basic technics of hemorrhoidectomy and stick with it and, if one follows good surgical principles, one will get good results and have an appreciative patient. So, regardless of what method is used, if one perfects himself in a sound technic, he is fairly certain of obtaining good results.

I would like to emphasize a few of the precepts which I have followed and which I have used to advantage to obtain maximum results, normal restoration of the anal outlet. Dr. Elkins already has touched on some of these points. (1) A failure in adequate removal of redundant skin of the anal margin frequently means postoperative edema with discrete swellings of inflammatory tissue. (2) A careful and open method of excision of hemorrhoids to avoid traumatizing the deeper parts makes it possible to see plainly what tissues are being manipuated and in what structures the sutures are being placed. I always avoid placing a suture so deep as to include the external sphincter and so avoid injuring the nerve and muscle fibers. (3) Seldom should any sewing or clamping be done in the region of the anal margin. This is a sensitive area richly supplied with sensory and motor nerves. Pinching or crushing of these tissues will produce a great deal of pain. (4) Avoid the placing of tubes, rubber tissue or any other foreign body in the anal canal as these cause rectal spasm and possibly urinary retention. (5) Avoid digital or instrumental dilatation to prevent constriction and deformities. It is felt that if surgery is performed properly, as emphasized by Dr. Elkins, these maneuvers will not be necessary.

As to the use of long lasting oil soluble anesthetics, the following complications have been reported in the literature: (1) involuntary bowel movements, (2) prolonged sensory anesthesia, (3) constitutional and local reactions, (4) itching and local urticaria, (5) superficial necrosis, (6) deep abscess. Personally, I have never used this type of anesthetic and I do not believe that its use is indicated if correct surgical technic, as outlined, is followed. I prefer a local anesthetic (1 per cent procain). If the technic of injection of the local anesthetic is carried out properly, no edema will result and there will be complete sphincter relaxation for the duration of the operation.

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BOOK REVIEW

PARACELSUS, Magic Into Science, by Henry M. Pachter. Henry Schuman, Inc., New York. 1951. Price $4.00.

This is a biographical novel and undoubtedly an effort to simplify and clarify the life, character and motives of this controversial figure of the Renaissance period. It consists of twenty-six chapters, each of which is headed by a quotation, which seemingly provides a text for that chapter; and each of these begins with a large black initial letter.

Both the theological and the medical contributions of Paracelsus are given consideration, and the material which is used is taken from original texts and modern versions. The latter includes the works of Goethe, Browning, Kolbenheyer and others.

There are seven appendices of which the one on "Chronology" is probably the most interesting and instructive. It is a table of general scientific and literary events arranged about the career of Paracelsus and his contemporaries. The illustrations are well chosen and authentic. R. S.

REHABILITATION OF THE RHEUMATOID ARTHRITIC PATIENT

C. STEWART GILLMOR, M.D.
KANSAS CITY

Arthritis has been afflicting the human race since the beginning of civilization. The Romans recognized certain forms of hydrotherapy in the treatment of arthritis. This was evidenced by beautiful baths, built of stone and marble, near the location of hot springs. The baths excavated at Bath, England, and Aix les Bains, France, contained warm water and sweating chambers made of stone, and they are partially intact to this day.

During the 17th Century[3] the treatment of rheumatism was largely in the hands of quacks, such as Mrs. Mapp the "bone setter." She would ride three times a week from Epsom to London with six outriders in scarlet preceding her. Another, Sir James Jay, was knighted by George III of England.

In 1676 Sydenham,[3] partly as the result of personal experiences, separated gout from other forms of rheumatism. There was no difference between the treatment of gout and rheumatism during the 18th Century. The object in both cases was to depress the fever, if any, and to drain off the "acrid substances" which were assumed to be causative. A useful summary of the treatment of rheumatism in the first quarter of the 18th Century is given by Boerhaave.[3] He states that rheumatism "is always cured by bleeding, cooling, repeated purges, ally'd at night with a narcotic; gently bathing in warm water, antiphlogistic fermentations, and blisters to the part; a thin spare diet, rest, the warmth of a bed, and toward the latter end by dry, hot frictions together with the use of antiscorbutics." This sentence is probably the first reference to massage in English medical literature.

Latham,[3] in his book (1796), was the first to state that "therapy must be adapted to the stage of the disease, and a knowledge of the normal." As the result of this new trend in therapeutics at the end of the 18th Century, most of the leading physicians came to adopt some form of "expectant treatment." It was gradually found that patients did as well under this regime as when subjected to elaborate and "lowering" methods of treatment.

Treatment[32] during the 19th and 20th centuries has consisted of baths at natural hot springs, hydrotherapy and changes of climate. Medications of liniments, salves, purges, analgesic drugs such as salicylates, cincophen, opiates, potassium iodides and bromides have been prescribed. Biological agents such as streptococcal, staphylococcal and mixed vaccines, supposed to be either specific or nonspecific, have been used extensively. Many types of proteins and protein derivatives have been employed to induce fever. Orthopedic measures have been used to prevent and correct deformities. Vitamins have been used alone or in conjunction with other therapy. Blood transfusions, pregnancy and jaundice have produced remissions. Injections of gold, colloidal gold and copper have been used with success. Many variations in diet have been followed. Eclectic belts have been worn and horse chestnuts, potatoes and buckeyes have been carried in the pockets. Many of these forms of treatment have been found ineffective and abandoned. However, some have a beneficial effect in the treatment of rheumatoid arthritis today.

The classification of rheumatic diseases varied with different workers until the classification accepted by the American Rheumatism Association in 1949 (table 1).

Table 1. *Classification of Rheumatic Diseases*

Arthritis due to infection. Specify joint and infection when known, as:
Arthritis of spine due to tuberculosis
Arthritis of knee due to gonococcic infection
Arthritis of wrist due to pneumococcic infection
Arthritis of knee due to syphilis
Arthritis due to rheumatic fever. Record Rheumatic fever as primary diagnosis invariably
Arthritis, rheumatoid, of . . . . Specify as:
Arthritis, rheumatoid, multiple (proliferative arthritis,* atrophic arthritis,* chronic infectious arthritis,* Still's disease*)
Arthritis, rheumatoid of spine (Marie-Strümpell arthritis,* ankylosing spondylitis,* von Bechterew spondylitis,* spondylitis ankylopoietica,* spondylitis rhizomelique*)
Arthritis due to direct trauma of . . . . . Specify joint and trauma, as:
Arthritis of knee due to contusion
Arthritis of elbow due to habitual dislocation
Neurogenic arthropathy. (Charcot joint*) Specify joint and cause, as:
Tabetic arthropathy of knee
Arthritis due to gout. Specify joint. Record Gout as primary diagnosis invariably
Degenerative joint disease, multiple, due to unknown cause (osteoarthritis,* hypertrophic arthritis,* degenerative arthritis,* chronic senescent arthritis*)
New growths of joints. Specify joint and neoplasm as:
Synovioma of knee
Hydrarthrosis, intermittent, of . . . . . Specify joint
Fibrositis. Specify joint or area
Myositis, bursitis, neuritis, and neuralgia. Specify muscle, bursa or nerve involved
Diseases in which arthritis, arthropathy or arthralgia is frequently associated (diagnose disease, list joint manifestation as symptom)
Acromegaly, acute disseminated lupus erythematosus, cyst of meniscus of knee, dermatomyositis, drug intoxication. Specify drug when known. Erythema multiforme exudativum, erythema nodosum, hemophilia, hysteria, ochronosis, osteochondritis dissecans, osteochondromatosis, periarteritis nodosa, psoriasis, purpura, various types. Raynaud's disease, Reiter's disease, scleroderma, serum sickness.

* Names in parentheses are synonyms.

In discussing the rehabilitation of the arthritic patient, remarks will be limited to adult rheumatoid arthritis, acute and chronic.

The etiology or exact cause of rheumatoid arthritis is not definitely known, but there are certain factors in which there is general agreement.[27] (1) Rheumatoid arthritis is a disease of temperate climates with a low incidence in the tropics. (2) It has a definite tendency to be familial. (3) Eighty per cent of the cases occur

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Presented at the 94th Annual Session of the Missouri State Medical Association, March 30-April 2, 1952, St. Louis.

between the ages of 20 and 50, with the peak at 35 to 40. (4) Females are more commonly affected than males in a ratio of three to one. (5) Preceding the onset symptoms, emotional shocks are common. These may be manifested by a severe depression. (6) Pregnancy may cause an amelioration of symptoms. (7) Liver involvement, with or without jaundice, causes a definite remission in a significant number of cases. (8) Disordered adrenal cortical function is an important etiologic factor. (9) Rheumatoid arthritis[14] as a disease entity is reversible and some cases have a natural remission.

The pathology of rheumatoid arthritis is manifested by involvement of the connective tissues and is classified in the group of collagen diseases. The pathologic picture is the pannus which may originate in the connective tissue of the joint capsule, spreading centrally to involve the cartilage and destroy it partially or entirely; or, the pannus originating in the connective tissue of the cancellous bone, spreading through the cartilagenous plate and destroying the bony trabeculae and cartilage. This process will result in decalcification of bony structures, destruction of cartilage and diminished joint space and will end in partial or complete ankylosis, depending on the severity of the process. Increase of fluid in the joint capsule is of frequent occurrence, especially early, and gives the characteristic fusiform appearance of the joints. Connective tissue involvement in the musculature takes place and results in muscle atrophy.

The symptoms of rheumatoid arthritis can be divided into prodromal symptoms and active symptoms. The prodromal symptoms may precede the joint involvement by several months or years and are characterized especially by fatigue and later muscle weakness and soreness. The patient states, "I do not have a feeling of well being," is frequently examined and, because joint and x-ray findings are absent, no disease entity is found. Joint involvement may occur and disappear without treatment. However, sooner or later, the joint involvement will occur again and remain permanently. This is generally symmetrical, affecting the hands, wrists, feet, knees, shoulders, or becoming a multiple joint involvement. Rheumatoid arthritis affects the proximal and midphalangeal joints of the hands, giving the characteristic fusiform appearance. One joint may be affected suddenly with acute swelling and severe pain and must be differentiated from acute bacterial infection and gout.

Laboratory findings reveal secondary anemia with decreased hemoglobin in 90 per cent of the cases. Leukocytosis may or may not be present. The erythrocyte sedimentation rate shows an increased and rapid rate of fall in the majority of active cases of rheumatoid arthritis. Urinary findings are normal unless urologic complications are present.

The treatment of rheumatoid arthritis can be performed in the office and the patient's home in the majority of cases. This consists of mental rehabilitation, medical supportive treatment, rest, physical therapy, functional training and orthopedic measures if indicated.

Early hospitalization, if available, is often helpful in affording the patient adequate rest, correct therapy and other beneficial treatment.

The procedure for treatment of these patients may be divided into three plans.

PLAN I

A careful history must be taken and thorough examination made of the patient on the first visit. The majority of these patients have received many types of "shots" and medications, resulting in no improvement, and the severity of the disease has increased. Many are mentally depressed and every effort should be made to have them realize that, in most cases and especially early in the disease, they may have improvement with the simple forms of treatment. This procedure was followed by Short and Bauer[29] in treating 274 patients over a period of several years. The patients received only general and orthopedic measures, resulting in 52.9 per cent of improvement. The arthritic condition of many of these patients was far advanced when treatment was instigated. Mental and physical rest is the most important factor of treatment. Caution against work should be emphasized and regular rest periods in bed should be followed in the forenoon and afternoon.

Diet high in protein with adequate amounts of fruit, vegetables and milk products should be followed, with feedings between meals when the subject is underweight and avoidance of too many fats and carbohydrates when obese.

Medications of iron, multiple vitamins, calcium and liver are needed for correction of anemia and supportive treatment for body metabolism. Analgesics are indicated, with aspirin grs. 5 every three hours sufficing in most cases. In cases with severe pain, codeine gr. ½ with aspirin may be used with caution.

Blood transfusions are most helpful in early treatment of rheumatoid arthritis when the secondary anemia is severe. Transfusions help in rebuilding the general physical condition of the patient and lessen the time needed to return to a state of well being. Serial transfusions of from 250 cc. to 400 cc. of whole blood are given at intervals of a few days until two or three have been given.

Physical measures are important and have stood the test of time. Since the introduction of the many new adjuncts to treatment and the excitation of the populace by the lay press, the physical measures of treatment have been neglected. Polley[25] suggests most wisely that "Physical medicine should not be used to the exclusion of other therapeutic measures and in most instances other

forms of treatment should not be used to the exclusion of physical medicine."

Hydrotherapy is important and the patient should be instructed carefully in these measures. In severe, acute cases the patient should remain at rest on a firm, flat, comfortable bed. Warm, moist fomentations, as moist bath towels, should be applied to the joints affected. These may be applied for one half to one hour two or three times daily. Linaments may be used with efficacy with the fomentations. Contrast baths may be used for the extremities by immersing them in warm water for ten minutes, cool water for four minutes, and again in warm water for ten minutes. Warm tub baths are beneficial, daily or every other day, in relieving discomfort and facilitating muscular movement. In the hospital the Hubbard tank or pool is used.

Wax baths benefit the joints of the extremities. These consist of five pounds of melted paraffin diluted about one fourth with mineral oil. Place the paraffin in a large double boiler and heat to the melting point. Add mineral oil. Remove from the heat. When film begins to form on the surface of the mixture, test carefully with the finger to determine temperature. If it is not too hot, immerse the hands with fingers spread, four or five times, until there is a thick coating over the hands and wrists. Then cover with a piece of woolen cloth and rest the extremities for one half hour. Remove the wax, which may be used again. A small paint brush may be used to apply this mixture to the knees, and to the feet and ankles if the pan is not large enough for immersing them.

Infra red lamps and heating pads may also be helpful. The Luminous Baker is useful in applying heat to the back and bilateral joints. Diathermy should be used with caution.

Orthopedic measures should be executed early when indicated. Crutches should be utilized to prevent cartilage destruction when weight bearing joints are involved. Ace bandages or plaster should be used to protect affected joints and prevent deformities. Corrective shoes, with inner metatarsal and plantar supports and Jones bar supports, may be employed to protect the feet.

Exercises, active and passive, should be done. When the condition is severe and quite acute, passive exercises flexing the involved joints should be performed early and daily in the treatment. This will help to prevent ankylosis, muscle atrophy and will maintain muscle tone and strength. When the patient can act for himself, active exercises should be taught. These should be gradually increased as the patient's general condition improves. Deep breathing while on a firm bed, and exercises for the neck, shoulders, arms, wrists, fingers, hips, knees, ankles and feet should be included, repeating several times a day but never to the point of fatigue. Muscle setting exercises of the thigh muscles should be carried out from eight to ten times every hour.

Body massage may be taught to some member of the family when a physical therapist is not available. Caution should be given to massage lightly, but firmly, so as to reach the musculature and not just rub the skin. This is beneficial and should be done daily.

These measures should be followed and the patient observed carefully for from one month to six weeks. If there is no improvement, the treatment in the second plan of procedure should be instituted.

PLAN II

This consists of the treatment in Plan I with the addition of gold therapy.

The use of gold as a therapeutic agent in the treatment of rheumatoid arthritis has increased since the report by Forestier[8] in 1929. It is used in the majority of the rheumatism clinics of America and was recently approved by the Council of Pharmacy and Chemistry[4] of the American Medical Association.

The types of gold available are water soluble and colloidal gold. While I was serving as a research fellow in two municipal hospitals in New York, water soluble gold* was used exclusively because of fewer toxic manifestations. In the Arthritis Clinic of Kansas City General Hospital No. 1** only six mild toxic reactions have been seen in four years while using this type of gold for therapy in rheumatoid arthritis.

The way in which gold salts act to cause their effect when used in the treatment of rheumatoid arthritis is not known.

The general consensus of opinion[9] is that gold should be used early and not as a last resort. Gold should be used when active synovitis is present to prevent ankylosis, as it will not correct permanent ankylosis resulting from destructive changes of bone and cartilage. It should be utilized to prevent further progressive changes. The patient who has a crippling, but nonactive, phase of the disease should not receive gold. Gold is beneficial only when the disease is active.

A few cases, when first receiving gold therapy, may notice an exaggeration of symptoms. However, this soon disappears with a gradual improvement of the arthritic condition. In rare instances gold therapy cannot be continued because of the increase of the arthritic complaints.

Contraindications to gold therapy[9] are: (1) History of severe reaction to previous use of gold or heavy metals. (2) Allergic conditions should be observed with caution, but in themselves they are not a contraindication. (3) Pregnancy is not a definite contraindication, but gold therapy is seldom needed because of the reversible effect pregnancy has on rheumatoid arthritis. (4) In

* Sodium aurothiomalate and aurothioglucose.
** Sponsored by the Kansas City Chapter of the American Arthritis and Rheumatism Foundation.

congestive heart failure it is wise not to use gold therapy. (5) Gold is contraindicated by existing kidney and liver disease. (6) Age is not a contraindication if the function of the vital organs is good. However, it is wise to use gold with caution in debilitation from any cause. (7) Other contraindications are uncontrolled diabetes, severe blood dyscrasias as seen in Felty's syndrome, purpura, aplastic anemia, hemophilia, granulopenia and severe anemias.

Toxicity from gold is the greatest problem in its use. As a rule toxic manifestations do not occur until from 300 mg. to 400 mg. have been received. Great caution should be followed because in a few patients toxic conditions may be evidenced following the first or second dose of gold salts. Cutaneous reactions are the most common, such as dryness of the skin and pruritus with mild or intense itching. Pruritus as a rule is associated with gold dermatitis. Mouth lesions may develop as "dryness or metallic taste" preceding glossitis, gingivitis or stomatitis that may ulcerate. Gastrointestinal toxicity is rare but should be considered. Nephritis may develop and is in evidence by albuminuria and increased sediment findings in the urine. Hematal disorders, as blood dyscrasias, rarely occur but if present may be serious and even fatal.

To determine evidence of toxicity, the patient under treatment must be questioned carefully and examined each time before receiving gold therapy. Laboratory procedure with weekly urinalysis and blood count should be performed. Gold therapy should be discontinued at evidence of any toxicity and resumed with caution when the condition has been corrected.

Treatment of gold intoxication follows:[9] (1) Discontinue gold therapy. (2) Lotions and antihistaminic drugs for pruritus. (3) BAL[13] (British anti-Lewisite) 2,3-Dithiopropanol has been used with success in experimental studies with animals and later in the treatment of humans. (4) Cortone and ACTH[36] are beneficial and eliminate skin manifestations rapidly in most cases.

In many cases of rheumatoid arthritis improvement will be noticed after two or three months of gold therapy. Weekly injections of gold are given until relief is obtained, demonstrated by improvement of well being, lessened pain and joint swelling and increased joint movement. The interval of dosage is then extended to two, three and later four weeks as the improvement occurs. It is always advisable to extend the dosage interval after 1,000 mg. have been given. Many investigators maintain monthly dosage schedules for several years.

Smaller doses of gold have been found to be efficacious of late by investigators.[10] They have shown that gold in half the dosage used prior to 1942, in the earlier days of gold therapy, gives just as good therapeutic results and considerably less toxicity.

Careful explanation of gold therapy should be given and permission for its use secured from the patient before starting this routine.

If one or two joints, especially the knees, are slow to improve during the treatment with gold, Hydro-Cortone (Compound F) injected intra-articularly into the joint (25 mg. to 37.5 mg.) at weekly or longer intervals will help in some cases. Hollander[19] of Philadelphia and Freyburg[11] of New York have demonstrated this and the Arthritic Clinic of Kansas City General Hospital No. 1 is having similar results. There are no toxic or "side" effects from the intra-articular use of Hydro-Cortone.

PLAN III

This plan is followed if Plans I and II do not produce improvement and if the disease process becomes more severe.

Plan III consists of Plan I with the addition of Cortone or ACTH therapy, whichever hormonal drug is indicated. Careful studies should be made when hormonal drugs are to be used for therapy.[1, 2, 5, 6, 12, 14, 15, 16, 17, 18, 20, 26, 28, 30, 31, 34, 35]

Hormonal therapy has been found beneficial by Martin and Polley[24] in combination with physical therapy. It is my observation that patients, who show no improvement with gold therapy and do not need continuous hormonal therapy, are benefited by interim treatments with Cortone or ACTH therapy combined with physical therapy.

Cortone or ACTH therapy should not be used before the procedures previously outlined have been thoroughly tried.

Cortone and ACTH are useful at times when corrective orthopedic procedures are to be followed.[7, 33] The patient should be cautioned concerning the withdrawal of Cortone therapy, which should be done gradually because of the "Cortone Rebound State."

Cortone therapy is most important if used correctly and many times it is a "life-saver" to cases not responding to other forms of treatment, preventing them from becoming arthritic derelicts. Cases progressing to this degree of helplessness were frequent in occurrence before the momentous announcement of the beneficial effects of Cortone.[17]

The orthopedic measures, consisting of manipulations and surgery, described hereafter may be utilized during any plan of treatment previously outlined.

Manipulation of chronic deformed joints should be considered and, if possible, performed to facilitate the patient's return to an active and productive life. Manipulations should not be performed during the active stage of arthritis, when the patient is seriously ill, when x-rays show bony ankylosis or if there is severe atrophy of muscles. These manipulations[22] should be done only by those skilled and well trained in such

methods. Cases for manipulations are those due mainly to adhesions within or about the joints, and muscular contractions. These should be accomplished under regional or general anesthesia. Care should be taken to prevent fractures, vascular and soft tissue injuries. Casts should be applied following manipulation and bivalved when dry to allow for continued physiotherapy. This is to prevent loss of the correction obtained. Manipulations can be performed at weekly intervals until the desired improvement is accomplished. Such procedure is most beneficial when the knees are involved. Results are excellent in many cases of the knees, permitting the patient to carry on active and essential duties without the use of crutches or a wheel chair.

Surgical procedures[23] are considered when there are deformities with bony ankylosis, persistent joint swelling interfering with joint function, loose bodies and pain. Surgical procedures are also indicated for pathologic diagnosis.

Patients who have been inactive for years are poor operative risks and their tissues heal slowly.

Principles to be followed in joint surgery[23] are: (1) Do not operate during the active stage of arthritis. (2) Develop surrounding muscles by exercises several weeks prior to operation. (3) Attempt to obtain a functionally useful joint and begin postoperative motion as soon as possible. Cortone has been found useful to facilitate preoperative and postoperative muscle movements.[33]

The types of surgical procedure beneficial at times are: Arthrotomies, synovectomies, posterior capsulotomies of knees, flexion contractures of soft tissues, osteotomies[21] for phalangeal and metatarsal joints, arthrodesis for hips, wrists, feet and ankles, and arthroplasties for elbows and knees. In arthroplasties of the elbow,[23] fascialata is the most satisfactory for interposition of the joints. In the knee, nylon has been proven to be of more benefit by Kuhns of Boston,[23] and by Dr. Garrett Pipkin in cases operated in this clinic. Hip arthroplasties are indicated at times, using the vitallum cup and acrylic replacement. In this clinic's experience, when the goal is to permit the patient to be able to sit in a wheel chair and avoid the drudgery of being bedfast, the results are most satisfactory. When weight bearing on the hips is desired, results have not been so good. These same findings have been reported by others.

Rehabilitative measures which are most beneficial to be used with the methods of treatment outlined are: (1) Functional retraining, consisting of gait training with parallel bars, stairs and ramps. (2) Shoulder wheels, ladders, pulleys and occupational therapy for rebuilding the muscles of the upper extremities. (3) Occupational therapy such as weaving, braiding, carpentry, painting, jigsawing and bookbinding, as well as recreational therapy, to facilitate muscle and joint movement and also to improve the patient's mental outlook.[4] Vocational training and rehabilitation will fit the partially handicapped patient into a productive occupation. This is accomplished in Kansas City by the Rehabilitation Institute under the excellent direction of Mrs. Vivian Shepherd. The National Department of Vocational Rehabilitation will also be of help in these cases.

CONCLUSION

Rheumatoid arthritis is a disease that may be reversible with improvement. The majority of cases can receive treatment in the patient's home and the physician's office. Three plans of treatment have been suggested. If Plans I and II do not produce improvement in the condition of the patient, hospitalization for blood transfusions, physical therapy, Cortone and ACTH therapy and, possibly, further orthopedic procedure and rehabilitative measures should be considered.

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BOOK REVIEWS

A TEXTBOOK OF PHARMACOLOGY, by William T. Salter, M.D., Professor of Pharmacology, Yale University School of Medicine. W. B. Saunders Company, Philadelphia and London. 1952. $15.00.

Numerous pharmacology texts have appeared in recent months, but not one of these has proved to be entirely satisfactory. The present volume (the largest of the lot) is, unhappily, no exception. It is charmingly written, but is far too cumbersome to serve well as an elementary textbook. On the other hand, the practitioner will fail to find the answers to many of his questions if he attempts to use it as a reference work.

Each chapter begins with an interesting historical sketch, and closes with a discussion of unsolved problems and a synopsis. These favorable features are offset by a lack of coherence in the discussion of pharmacologically related drugs and a rather arbitrary, if not inappropriate, classification of drugs into therapeutic groups. Undergraduate stndents will doubtless be confused by the abandonment of the classification of drugs based on mechanisms of action.

Most structural formulae are clearly expressed, but important chemical relationships are obscured in some of them. Figures and tables are of variable quality. The author might well have given more consideration to their selection—with an eye to simplicity and uniformity. A consistent and logical nomenclature of drugs would also help. The student, and likely the practitioner, will be confused by the random use of proprietary and official terminology.

While this is not an ideal reference or textbook, it may have a useful function as an auxiliary text, albeit a weighty one, and it should provide delightful hours of reading for the physician who has the time and inclination to peruse it leisurely. J. D. R.

LIVING IN BALANCE, by Frank S. Caprio, M.D. The Arundel Press, Inc., Washington 13, D. C. $3.75.

This is another book for the neurotic and maladjusted layman. There is exposition and elucidation of situations, attitudes, symptoms and feelings as they affect and disturb the delicately balanced members of the population, together with some measurance and directions for correction. The various statements seem to be sound and the book should be valuable to many whose disorders fall within the sphere indicated. L. B. A.

SPONTANEOUS HEMORRHAGE FROM THE LATERAL NASAL WALL

G. HARDY, M.D.
ST. LOUIS

SEVERE NASAL bleeding can lead to serious results and it is a condition which is distressing to both patient and physician. It often starts when the individual is at rest and seldom is there a history of physical exertion prior to the onset. The bleeding is usually spontaneous and tends to recur. In a relatively short time there are likely to be several episodes. The recurring bleeding rapidly produces anemia and may cause shock. One of the most outstanding signs is the patient's extreme anxiety.

It is not associated, generally, with trauma, although it may occur after an injury or an operation. Neither does this bleeding arise from the most frequently traumatized part of the nose, the septum. In this particular type of nasal hemorrhage, the site is on the posterior lateral nasal wall. A small lesion in this area is difficult to see in any nose and impossible to see in some noses. The nasopharyngoscope is probably the most useful single instrument in examining this part of the nose.

This severe type of bleeding is not readily controlled but with a drop in blood pressure it may cease spontaneously for a short period. Therefore, simple methods of control such as the insertion of a small cotton tampon and the local application of coagulants or vasoconstrictors may appear to be effective. This leads to a false sense of security because the bleeding is almost certain to recur and the same measures will then prove to be ineffective.

In many of these patients no cause can be found for the spontaneous hemorrhage. In some, hypertension or arteriosclerosis or both are found. This is to be expected since the elderly are more frequently afflicted. In a small number of persons a blood dyscrasia or a tumor may be the cause. Many of these patients fear a tumor because they associate bleeding with malignancy and this association adds to their anxiety. In the age group with arteriosclerosis and hypertension, tumors are more likely to occur and must be ruled out by a thorough examination and by x-rays of the sinuses. The patient with a blood dyscrasia is more likely to be detected since examination of the blood would be a routine procedure after a hemorrhage.

Spontaneous bleeding into the maxillary sinus with the escape of blood through the nose, has been reported by LaClair and others. LaClair[1] stated that mucous membrane removed from an involved sinus showed chronic hyperplasia with an edematous and hemorrhagic stroma. He recom-

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mended eontrast medium studies on all patients with intramaxillary hemorrhage and a Caldwell-Lue operation if the lining membrane appeared abnormal.

The ineidenee of severe hemorrhage occurring postoperatively is low. In a series of 106 cases of sevcre epistaxis, Spar and Hallberg[2] listed but two instances in whieh it followed sinus surgery.

Woodruff[3] has described the veins around the posterior tip of the inferior turbinate. He suggested that eardiovaseular epistaxis probably came from these veins or from deeper lying arteries. To stop bleeding from these vessels he recommended nasal tampons whieh were to be left for five days. He advised a posterior nasal pack only if the bleeding vessel was at the choanal opening or in the nasopharynx, or if a deflected septum interferred with tamponage of the inferior meatus.

Although it is seldom necessary, I believe that submucous reseetion of a badly deflected septum is a justifiable procedure in searching for the souree of bleeding. This will permit adequate inspeetion of the lateral nasal wall, proper packing of the nasal chamber, and the application of the eleetroeautery to the bleeding vessel if it is found.

On one oceasion, when a patient had had repeated hemorrhages, I found it neeessary to reseet the nasal septum of an elderly man in order to see the lateral nasal wall. After adequate exposure was obtained, a vaseular tumor was found involving the upper lateral wall and the ethmoid labyrinth, and the neoplasm was the souree of the bleeding. The pathologie report on the tumor was hypernephroma.

IMMEDIATE CARE

If at all possible these patients should be hospitalized because this type of bleeding really requires hospital eare for proper control. In an emergency, a nasal pack may be inserted at the patient's home and the blood flow slowed or even stopped. Since reeurrenees are common he should be transferred to a hospital as soon as possible. Treatment usually extends over several days and it can be better supervised there. For the physician, hospitalization is desirable because he ean have light, suetion, instruments and paeking at the bedside and, in addition, there are faeilities at hand for transfusions and laboratory examinations.

It may be diffieult at first to determine whieh side of the nose is bleeding. If the patient is seen during an attaek, blood may be flowing from each nostril and streaming down the pharynx. Clotted blood may fill eaeh nasal chamber and the nasopharynx as well. As soon as it is determined by questioning and examination which side is bleeding, a posterior nasal pack is inserted. It should be large enough to ocelude the ehoana on the involved side. The insertion of a posterior nasal pack aeeomplishes two things: first, the flow of blood into the pharynx is diminished or cheeked and, second, the pack plugs the choana and provides a barrier for the additional packing which is introduced through the nares. In the absence of a ehoanal plug a portion of the nasal pack may be pushed into the nasopharynx and drop into the throat. The anterior gauze packing is also less likely to slip out of position if the ehoana is blocked. Sufficient pressure to ocelude the bleeding vessel will be maintained if all of the packing remains in position. In my experience, it has been better to insert a posterior nasal pack as soon as possible rather than to wait and observe the effects of anterior packing alone.

The most satisfactory posterior nasal pack in my hands has been one made of lamb's wool. Two braided silk eords are either sewed into or tied around a ball of wool in such a manner that three long ends of the eords hang from the paek. The tampon is inserted in a routine manner using as a guide a soft rubber urethral eatheter whieh has been passed through the nose into the pharynx and out of the mouth. By tying two of the silk cords to the oral end of the catheter and pulling them through the nose, the wool ean be guided into the nasopharynx. The two eords pass through the nasal chamber and tension on them keeps the pack snugly in the ehoana. The third eord hangs along the pharyngeal wall and can be readily grasped when the pack is to be removed. Smearing the surfaee of the lamb's wool with petrolatum renders insertion of the pack easier and prevents immediate saturation of it with blood and nasal seeretions.

The paeking inserted through the nares should be a continuous strip of single layer fine mesh gauze impregnated with petrolatum. This type is less traumatizing to the mucous membrane and is better tolerated than plain or medicated gauze.

If in packing the nose one is fortunate enough to obtain direct pressure on the bleeding area, the flow of blood will cease almost as soon as the paeking has been completed. However, because of the inaccessibility of the bleeding vessel and the anatomie configuration of the lateral nasal wall, direet pressure is not always possible and blood may eontinue to trickle from the nostril for twenty minutes or more after the packing is completed. The bleeding will stop eventually as the pressure of the gauze and clotted blood within the nose increases and finally equals the arterial pressure. During this interval the patient should be reassured and quieted. Morphine is administered if it has not already been given. As previously mentioned, these patients are in a state of great anxiety. They are terrified by thoughts of reeurrence of bleeding and of being left without medical aid. To be in a hospital and to know that help is at hand is most reassuring to the patient.

The length of time a pack should remain in the nose has been stated by others as from twelve

to forty-eight hours. The chief reason for removing it after a short interval has been the fear of an auditory tube and middle ear infection. However, since acute infection starting in the ear and nose usually can be controlled with antibiotics, I seldom remove the packing in less than forty-eight hours and have left it in place as long as seven days without ill effects. Experience has shown that recurrence of bleeding is less likely if the intranasal pressure is maintained for a long period. Prolonged nasal packing is generally not advocated but a number of authors have found this necessary in order to control the bleeding. A middle ear infection rarely followed and it was readily controlled when it did occur.

The question of the proper time to remove a pack cannot be answered dogmatically since it depends on several factors. In general, however, it should not be removed until there has been no bleeding for at least forty-eight hours or until the odor of the pack demands replacement. Though the original packing may remain in place, slight bleeding may occur at intervals for several days. Even after a long period of discomfort from nasal packing, a patient is likely to question the advisability of removing it so great is his fear of another hemorrhage.

After the patient has been hospitalized and the immediate care has been completed, attention should be directed to his general physical condition and a search made for possible causes of the bleeding. During this time a blood transfusion may be indicated. Repeated blood pressure readings, blood counts and studies and x-ray examinations of the sinuses should be done at this time. The aid of the family physician or internist is of great value in the search for systemic disease. Whatever specific therapy is indicated should be started while the nose is packed.

The question of ligation of the arterial blood supply to the nose arises whenever bleeding persists or recurs. The principal blood supply to the nose comes through branches of the external carotid artery but some of it comes from the internal carotid artery by way of the ophthalmic and the anterior and posterior ethmoidal arteries. There is an anastomosis between branches of the two trunks on each side of the nose. There is clinical evidence that following ligation of an external carotid artery circulation is reestablished within a few days. Nasal hemorrhage occurring shortly after tying off the external carotid has been reported by a number of authors. In one instance, described by Johnson and Foster,[4] bleeding recurred five days after the artery was ligated. Bleeding from the nose had been present during the operation and ceased as soon as the artery was tied. It was evident, therefore, that the ruptured vessel was a branch of the external carotid system. When the hemorrhage recurred, the nose was repacked and then not disturbed for ten days. After that interval there was no further trouble.

Fitz-Hugh and Risher[5] reported the ligation of the external carotid artery of a 67 year old man in whom the site of bleeding could not be determined. Slight bleeding persisted after the ligation and three days later, after removal of the anterior and posterior packs, he had another severe hemorrhage. Following tying off the anterior ethmoidal artery, the bleeding stopped.

Some authors prefer ligating the internal maxillary artery because, as Sherrey[6] states, "the proximity of the ligature to the bleeding point obviates intermediate anastomoses." He reported successful control of severe epistaxis in three patients after transantral ligation of the internal maxillary artery.

Spar and Hallberg reported eleven ligations of the external carotid artery among 106 cases of severe bleeding requiring hospitalization. They gave as the indications for tying the vessel hemorrhage that persisted or recurred with severity, and a steady drop in the red blood count and hemoglobin level in spite of nasal packings and transfusions.

I examined one patient who gave a history of severe nasal hemorrhage following ligation of the external carotid. A 67 year old man with hypertension developed severe nasal bleeding from the right side of the nose in February 1951. This occurred in Florida where he was vacationing. He received transfusions, nasal packs and treatment for hypertension. He had recurring hemorrhages for four weeks and was admitted to a hospital several times during this period. During the last hospitalization the external carotid artery was ligated. The following day he had another severe hemorrhage from the right side of the nose. The electrocautery was applied to the right inferior turbinate and lower lateral nasal wall and the bleeding stopped. Normally, the cauterized area would be supplied by branches of the external carotid artery. The recurrence of bleeding can be explained on the basis of a free anastomosis between branches of the external and internal carotid arteries or on the presence of an anomalous vessel.

The application of the electrocautery is recommended whenever the site of bleeding can be located. It has been demonstrated repeatedly that bleeding from the septum can be controlled satisfactorily by the electrocautery and it has been my experience that it works as well when applied to the lateral nasal wall. The following report is presented as being fairly typical of the type of case under discussion.

CASE REPORT

A woman, aged 66 years, with hypertension, was hospitalized because of profuse nasal bleeding. A posterior and an anterior nasal pack had been inserted at her home by her family physician. This packing did not seem to be effective so she was

repacked after admission to the hospital. The packs were not disturbed for four days and after they were removed slight bleeding occurred at intervals for several days.

The blood pressure varied between 145/90 and 210/106 and the highest red blood count was 3,940,000 with 11.5 grams of hemoglobin (74.1 per cent). An x-ray examination of the sinuses was normal. The nose was examined repeatedly and it was decided that the bleeding came from either the posterior third of the inferior turbinate or the posterior third of the middle meatus. Bleeding finally stopped although nothing more was done and she was discharged.

A month later she was readmitted because of a recurrence. At that time the blood seemed to come from a small area in the middle meatus just anterior to the posterior tip of the middle turbinate. Because of the recurring hemorrhages, ligation of the external carotid artery was recommended but rejected by the patient. Bleeding persisted so the middle meatus was exposed by out-fracturing the middle turbinate and the electrocautery was applied to the suspected area. Two days later she vomited and a few drops of blood escaped from her nose but that was the last of the bleeding.

It is not my intention to build a case against ligation of the arterial supply to the nose. There are undoubtedly instances in which it is a life-saving procedure. There are, however, certain factors which should be considered before ligation is done and these are given in the following summary:

The packing should remain in place long enough to permit firm healing of the vessel wall or to allow a firm thrombus to form.

Careful and repeated examinations should be made in an attempt to locate the bleeding area. If it can be found, the application of the electrocautery is the most effective treatment.

Blood dyscrasias, tumors and pathologic conditions within the sinuses should be considered and ruled out.

Ligation of the external carotid artery does not always permanently stop the hemorrhage. The anastomoses between the anterior and posterior ethmoidal arteries and the sphenopalatine artery are usually responsible for a recurrence. Before ligation the external carotid one should be reasonably certain that a branch of that artery is causing the trouble.

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POLIOMYELITIS: EARLY TREATMENT OF SPINAL TYPE IN CHILDREN

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THE ULTIMATE in the treatment of poliomyelitis lies in the province of prophylaxis. This may be in the form of a vaccine or a similar agent. Some undiscovered antibiotic may cure poliomyelitis in the future but, until this utopia is accomplished, the therapy of this disease must follow certain manifest lines. The purpose of this paper is to report the results of a therapeutic regime used on thirty-seven hospitalized* cases of clinical spinal type poliomyelitis in St. Louis in the year 1951.

Michael Underwood's textbook, "Diseases of Children," written in England at the end of the 18th century, mentioned the disease with some understanding for the first time. Since that writing, treatment has varied with great flux. Attention to the older literature shows that every therapeutic agent both in and out of the pharmacopea has been tried at least once.

This study shows that early diagnosis is essential if the result of therapy is to be reasonably good. Procrastination after the diagnosis has been established certainly carries a residual from which many patients never recover. The plan for therapy consisted of:

(a) Early transfusion of whole blood preferably from male donors.
(b) Absolute bed rest.
(c) Maintenance of fluid balance.
(d) Hot packs, warm tub baths, as indicated.
(e) Aspirin or mild sedation, if necessary.
(f) High daily multi-vitamin intake, to include at least vitamin A, 6000 units, vitamin D, 1500 units, vitamin C, 80 mg., thiamin Cl. 3 mg., riboflavin 2.5 mg., and nicotinamide 20 mg.
(g) A plentiful high calorie diet.
(h) Deformity prevention.
(i) Penicillin prophylaxis.
(j) Treatment of special symptoms as they arise.

Consultation with an orthopedist and a physiotherapist was had in all cases.

There were seventeen female and twenty male children studied in the clinical spinal poliomyelitis group. Their ages ranged from 10 months to 13 years. Their cerebrospinal fluid cell counts ranged from 3 to 405. Cerebrospinal fluid chemistry and blood counts were in keeping with the usual findings in poliomyelitis. All children presented stiff neck, stiff back and stiffness of the hamstrings. Neurologic findings such as reflex changes, positive Brudzinski, and Kernig were not tabulated. In short, there was no doubt but that, clinically, the child had acute anterior poliomyelitis of the clinical spinal type. After routine complete physical examination including lumbar puncture had

* St. Anthony's Hospital and St. John's Hospital, St. Louis.

been done, blood studies, urinalysis, typing and cross matching were accomplished. Within from one to six hours after admission to the hospital the first whole blood was given. The amount varied from 4 to 11 cc. per kilo of body weight. Larger amounts were given to correct a low initial red

TABLE 1.
Time Relation of Blood Administration to Development of Paralysis

ONSET-CLINICAL SYMPTOMS DAY BLOOD GIVEN	NUMBER OF CASES	PER CENT OF CASES	PARALYSIS EVIDENT ON ADMISSION	FUTURE DEVELOPMENT OF PARALYSIS
1	8	21+	0	0
2	8	21+	1	1
3	6	16+	4	1
4	7	19	6	3
5 & over	8	21+	7	6

blood cell count or hemoglobin. Whenever possible, male blood was selected for transfusion. The transfusion was repeated within a twelve to twenty-four hour period using a like amount of blood. The same donor was used for the second transfusion.

Although the calculated percentages are undoubtedly inaccurate in that the number of cases is too small, it seems highly significant that the amount of residual paralysis in children receiving blood within the first forty-eight hours was unusually low. Likewise the extension of the paralytic process would seem to be reduced by the administration of early transfusion. Other beneficial factors such as the greater amount of rest in bed, high calorie diet, regulation of hydration and vitamin administration certainly must be considered. The possibility that certain nonparalytic cases herein included may have been coxsackie infection is not overlooked. Unfortunately, differential diagnosis by clinical methods is impossible and impractical by general hospital laboratory

TABLE 2.
Time Relation of Blood Administration to Recovery or Residual

ONSET-CLINICAL SYMPTOMS DAY BLOOD GIVEN	PER CENT RECOVERY	PER CENT RESIDUAL
1	100	0
2	87.5	12.5
3	33	66
4	15	85
5-10	13	87

study. Even with this possibility included, the overall percentage recovery of children receiving early blood transfusion is exceedingly good. It must be reiterated that this series is small.

DISCUSSION

In Kobayashi and Kehoe's[1] 121 spinal cases 30 per cent recovered and 70 per cent suffered residuals using a modified Kenny therapy. Forty per cent recovered and 59 per cent suffered residuals using non-Kenny therapy. From 30 to 40 per cent of these children showing evidence of muscle weakness on admission eventually recovered.

Many observers have employed blood for treatment. Grulee and Parks[2] have reported the use of whole blood and plasma in acute poliomyelitis when indicated. Lo Presti[3] recommends its use as a protein additive in bulbar poliomyelitis. In short, the administration of whole blood generally has been used for the extremely ill patients or, in selected cases, to do a specific task. Rest has always been a prominent factor in early therapy. Lo Presti[3] emphasizes this sternly. Weaver[4] and Mitchell[5] present the nonspecific and therapeutic agents having favorable influence on the disease. Numerous references may be found concerning fluid balance, the Kenny method and its modifications, diet and vitamins. Penicillin prophylaxis, because of its valuable help in reducing intercurrent infection, is well known and freely employed. Therapy for specific symptoms found in the disease is freely covered throughout the literature. Attempts to cure or relieve resultant paralysis by various agents is also adequately covered. Toomey[6] warns that mild degrees of paralysis early in poliomyelitis may seem to respond dramatically to any form of therapy; in these cases recovery often occurs spontaneously. He further notes that much of the pain during poliomyelitis tends to disappear in time. Claims for pain cures should therefore be viewed critically. Smith et al[7] have shown sympathetic nerve system involvement in poliomyelitis. Smith, Granhard, Goldstein and Bikoff,[8] believing the pain and spasm due to vasospasm resulting from the involvement of the intermediolateral cell column or sympathetic chain by the poliomyelitis virus, employed procaine, priscol[®] and diethylaminoethanol. Prostigmine and curare also have been employed for the relief of pain. Schopp[9] et al have employed a bacterial derivative, a complex polysaccaride, for the relief of spasm. Guyton[10] calls attention to the fact that early muscle pain may be due to brain stem lesions. Bodian[11] explains preparalytic spasm on the basis of brain stem lesion. In the cases herein reported, spasm was much more bothersome than actual acute pain. Most cases with pain complaint were relieved by acetylsalicylic acid, a few required phenobarbital sedation. Local moist heat and, later, thirty minute tub soaks helped reduce spasm. In this series, as in Pohl's,[12] spasm of the posterior neck muscles, posterior spinal and hamstrings was present in all cases.

To return to the early administration of whole blood, analysis of the possible mode of prevention of paralysis is in order. Bodian[13] presents three factors which may cause variation in the severity of infection; differences in strains of virus, reduction of severity due to previous paralytic or nonparalytic infection, and host variation. All or

any one of these factors would account for the low paralysis residuals in the groups given blood on the first and second day. Bodian[13] has shown that the onset of virus multiplication in the central nervous system and of cellular pathology reaction precedes the onset of paralysis by at least one day. Inflammatory changes and chromatalysis of Nissl substance in the cytoplasm of some nerve cells are the earliest pathologic changes. If whole blood is a factor in the prevention of paralysis, then there must be some physical or chemical mechanism or possibly some enzymatic addition supplied therefrom. The mere prophylaxis against hypoxia of the virus-damaged nerve cell is sufficient to warrant employment.

Knisely[14] in 1945 demonstrated sludging of blood in poliomyelitis. Boines[15] only recently reopened the subject, quoting Stewart's early description of the morbid anatomy of poliomyelitis which set forth the thrombotic theory of paralysis. Sludging reduces the rate of blood flow and promotes stagnant hypoxia, a combination extremely unfavorable to normal metabolic activity of nerve tissue. In nerve cellular metabolism, hypoxia theoretically may be mitigated in a twofold way, aerobically by oxygen directly or anerobically through the dehydrogenase enzyme systems. Administration of whole blood carries with it many phospho compounds which have energy rich linkages. One of these compounds, adenosine triphosphate, performs many transphosphorylation mechanisms in nerve tissue which precede glycolysis so necessary in nerve carbohydrate metabolism. It is conceivable that enzymatic function is interfered with at the cellular level and that administration of such enzymes present in blood may enhance cellular metabolism in the injured cell.

Horstmann's[16] work with monkeys and chimpanzees suggests the presence of viremia early in the incubation period of human poliomyelitis. Antibodies to the virus have been shown to be present when clinical symptoms develop.[17] A boost in this antibody activity by transfusion is conceivable.

Male donors were selected when available in this series because of possible greater immunologic activity, higher total red blood cell counts and higher adenosine triphosphate activity. Spinobulbar, clinical bulbar and encephalitic forms of the disease were screened because of the known "all or none" reaction shown by this group.

It is unfortunate that the total number of reported cases is small but, despite this fact, it was felt that early transfusion of whole blood offers the poliomyelitis patient as much as, if not a great deal more than, any known therapeutic agent.

SUMMARY

1. The analysis of thirty-seven cases of spinal type poliomyelitis occurring during the year 1951 is presented.

2. A treatment routine is listed.

3. The earliest possible use of whole blood transfusion from male donors seems to have a favorable prognostic significance.

4. Whole blood offers many chemical agents for immediate use.

4500 Olive.

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BOOK REVIEW

Rheumatic Diseases. Prepared by The Committee on Publications of The American Rheumatism Association. Charles H. Slocumb, M.D., Chairman; Howard F. Polley, M.D.; William D. Robinson, M.D.; Richard T. Smith, M.D.; Charles Ragan, M.D.; Edward F. Rosenberg, M.D., and Carlos Sacasa, M.D. Illustrated. W. B. Saunders Co., Philadelphia and London. 1952. Price $12.00.

This volume based on the proceedings of the seventh International Congress on Rheumatic Diseases and, therefore, the composite work of a great many authors presents the current thoughts on arthritis and related diseases. Some of the articles will have little appeal for the general physician because they are either too technical or impractical.

The articles which deal with diagnosis and therapy are worth while and well worth reading.

The chapters on psychogenic rheumatism, fibrositis and the use of gold and endocrine products may be read with profit by anyone remotely interested in these subjects.

The book is, on the whole, an extremely valuable review of current concepts and activities in the field of rheumatic diseases. R. O. M.

THE USE OF BELLADENAL AND NEO-CALGLUCON IN UROLOGY

MORRIS ABRAMS, M.D.,
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A DISTRESSING preoperative and postoperative complaint in prostatic surgery is the uncomfortable vesical spasm noted in many patients following the introduction of an indwelling urethral catheter. One purpose of this clinical investigation is to evaluate as a treatment of vesical spasm, Bellafoline, which, when used in conjunction with phenobarbital, is known commercially as Belladenal. The list of available antispasmodics to relieve vesical spasm is large. Belladenal was chosen because it has been demonstrated to be one of the more effective depressors of smooth muscle motility.[1] The latter drug has proved helpful in 73 per cent of a group of patients who had difficulty in tolerating a retention urethral catheter. It was also wished to renew interest in the use of calcium intravenously in the treatment of the severe pain found with acute epididymo-orchitis and renal colic. The calcium preparation used in this study was calcium gluconogalactogluconate (Neo-Calglucon). This calcium salt contains no foreign buffer, is highly stable and more soluble than calcium gluconate. Calcium gluconate is soluble in water only to the extent of 3.8 per cent. Neo-Calglucon will remain in solution up to a 20 per cent concentration. These properties of Neo-Calglucon minimize side effects and make possible a better absorption of the calcium since absorption of a calcium salt is directly proportional to its solubility.[2] Clinically, the antispasmodic action of calcium is well known. The structural formulas and relative solubilities for calcium gluconogalactogluconate (Neo-Calglucon) and calcium gluconate have been published elsewhere.[3]

METHOD AND RESULTS

Belladenal was used in the form of a rectal suppository. Each suppository contained 0.5 mg. of the active antispasmodic ingredient Bellafoline and 100 mg. of phenobarbital. This medication was given to any patient who had a retention catheter and who complained of either continuous urethral discomfort or of frequent bladder spasm associated with the passing of urine along the side of the catheter. These patients were usually uncooperative and too uncomfortable to eat and drink fluids in adequate amounts. Many of them were in such discomfort that they constantly were attempting to pull their catheters out of the bladder. The dosage used was adjusted to each individual patient. In general, initially, one suppository was given every six hours for four doses. The time interval was then increased to every eight hours for the next twenty-four hours. Frequently, at the end of the third day, one suppository every twelve hours proved sufficient.

A group of forty-nine patients was treated. All had required indwelling urethral catheters either prior to or after prostatic surgery. Twenty-one of this group voluntarily admitted feeling better within two to four hours after the first suppository. An additional twelve patients were clinically more comfortable at the end of twenty-four hours. Three patients, who claimed only a slight improvement with the suppositories, were completely relieved when they were also given orally Bellafoline tablets. Thirteen cases (27 per cent) showed no clinical response to this form of medication. The only side reaction noted was drowsiness in some of the patients. For this reason Bellafoline suppositories (minus the phenobarbital) were tried on a small group of patients. The clinical response to this drug was poor. In another small group of cases the Belladenal tablets were tried orally. These as well as phenobarbital alone likewise failed to give the same measure of clinical relief as the suppositories. Although it is admitted that the evaluation of an antispasmodic drug solely by the patients subjective response is open to criticism, nonetheless, the fact that 73 per cent of the patients had relief remains a significant observation.

In treating the severe pain associated with acute epididymitis and renal colic, the calcium preparation used was Neo-Calglucon. The treatment of this type of pain with calcium is not new. Earlier investigators,[4, 5, 6, 7] using either calcium chloride or calcium gluconate, reported excellent relief of pain. Because our results were so dramatic, especially in the cases of acute epididymitis, renewal of interest in calcium therapy, using this highly soluble double complex calcium salt, was thought desirable. The only side reaction noted following the intravenous injection of Neo-Calglucon was a generalized sensation of heat, which frequently may develop following the intravenous injection of any preparation containing calcium ions. Slow injection of the Neo-Calglucon will minimize this effect which is due to the specific stimulative action of calcium on the warmth receptors. The usual dose of 10 cc. of a 20 per cent solution of Neo-Calglucon should be given intravenously over a five to six minute period. The only contraindication to intravenous calcium therapy is found in individuals receiving digitalis therapy. Calcium accentuates the systolic contraction of the digitalized heart. The combined effect of the two drugs may conceivably produce systolic arrest.

A total number of thirty-two cases of acute epididymo-orchitis was treated. The usual dose was 10 cc. of a 20 per cent solution given intra-

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The Belladenal and Neo-Calglucon were made available through the courtesy of Mr. S. H. Lane, Sandoz Pharmaceuticals, Inc.

venously. Nineteen of the patients were dramatically relieved of the severe scrotal pain within a few minutes after the completion of the injection. Ten patients reported considerable relief of pain. In two cases one injection only was necessary to keep the patient symptom free for the duration of his illness. In all the remaining patients Neo-Calglucon was repeated in six to ten hours for continued relief, the majority of patients receiving a total of three injections. In three cases no relief occurred. Additional treatment included the use of a scrotal support. Antibiotics were used only if the epididymitis was complicated with a urethral discharge. Of the thirty-two cases treated thirty gave a history of having one or two previous attacks of gonorrhea. Two cases followed prolonged catherization following prostatectomy.

The efficacy of intravenous calcium injection in relieving the severe pain of renal and ureteral colic has been reported previously.[8] In our series seven patients with colic were treated with Neo-Calglucon. The initial dose was 10 cc. of the 20 per cent solution intravenously. Five patients received definite relief of pain within a few minutes after the intravenous injection. One of these patients passed a small calculus, which was lodged in the lower third of the right ureter, two days later. In two cases calcium intravenously had no effect on the pain and large doses of demerol and atrophine were necessary for relief. The striking temporary relief of pain in five of a group of seven patients again stresses the value of calcium intravenously in the management of renal stone colic.

SUMMARY

Belladenal suppositories have proved a useful medication in the relief of the severe bladder spasm found in patients who tolerated indwelling catheters poorly.

Table 1. *Summary of Treatment*

Medication	Belladenal (Rectal Suppository)	Neo-Calglucon	
	Vesical Spasm	Epididymitis	Ureteral Colic
Total Cases Treated	49	32	7
Effective	36	29	5
Noneffective	13	3	2

Neo-Calglucon, 10 cc. of a 20 per cent solution, gave almost dramatic relief from the severe pain of acute epididymo-orchitis in twenty-nine of thirty-two cases treated. Neo-Calglucon also can be used for the temporary relief of the colicky pain occurring with renal or ureteral calculi.

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BOOK REVIEWS

SURGICAL CARE—A practical Physiologic Guide—by Robert Elman, M.D., F.A.C.S. Professor of Clinical Surgery, Washington University School of Medicine; Assistant Surgeon, Barnes Hospital; Associate Surgeon, St. Louis Children's Hospital; Director of Surgical Service, H. G. Phillips Hospital, St. Louis, Missouri. Publishers Appleton-Century-Crofts, Inc., New York. Price $8.00

The greatest progress in surgery in the past twenty-five years has come from the laboratories of physiology and chemistry. If the surgeon of World War I were to look at surgery today, he would be appalled by the wide-spread use of blood transfusions and of glucose, saline and amino acid infusions. He would miss the Murphy drip. He would be lost among the sulfonamides, penicillins, streptomycins, aureomycin and chloromycetin. He would be astounded to see spinal and sacral anaesthesias; and he would marvel indeed to see a patient go to sleep under Pentothal. He would be intrigued to learn of the use of Heparin and Dicoumarol in thrombo-embolic diseases.

But if this Rip van Winkle wished to get up-to-date, here is a most excellent book, highly readable, which presents in understandable form, all of these advances in "Surgical Care."

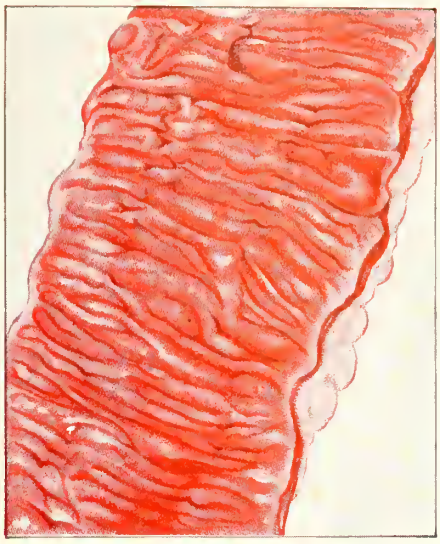
The author has done a splendid job of presenting the physiology on which modern surgery rests, and many present day surgeons would be helped by reading it. B. S. P.

SURGICAL PRACTICE OF THE LAHEY CLINIC by Members of the Staff of Lahey Clinic, Boston, Mass. 784 Illustrations on 509 Figures. W. B. Saunders Company, Philadelphia and London. 1951. Price $15.00.

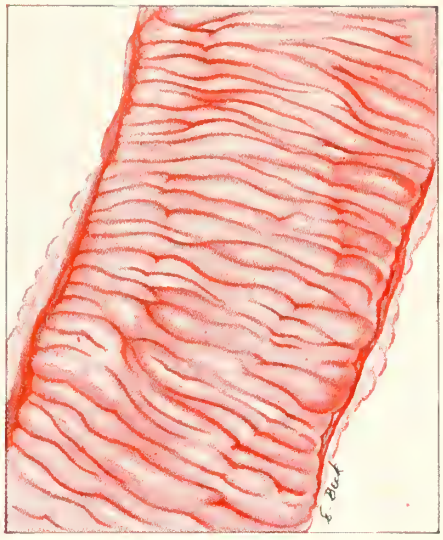
This volume follows, by roughly ten years, a similar work from the Lahey Clinic which met with a favorable reception. It is in essence a compilation of papers published from the Lahey Clinic in the last ten years. Again the emphasis is on the many standardized procedures that it is the policy of the Clinic to employ. For the practitioners, it is of value since most of the subject matter concerns itself with ordinary surgery. However, there is enough added on newer technics and diagnosis to acquaint the practicing surgeon with the problems that are being handled in more rarified atmospheres.

The section on thyroid and neck surgery is, of course, one of the better parts of the book. Among other good sections is the group of articles on stomach surgery, surgery of bile duct strictures and the section on colonic surgery. There are also papers on such rarities as pheochromacytoma and panchreato duodenal resections — which add a little spice to the mixture. A. M. R.

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* Block, L. H.: Management of Constipation with a Refined Psyllium Mucillaid Combined with Dextrose, Am. J. Digest. Dis. *14*:64 (Feb.) 1947.

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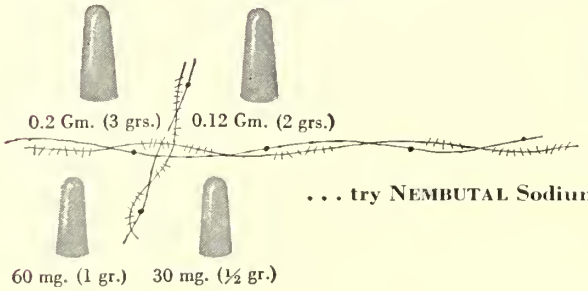
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Postgraduate Review

BARBITURATE INTOXICATION

MAURI FELDAKER, M.D.
CLAYTON, MO.

Barbiturate poisoning is not an uncommon condition and the use of barbiturates as suicidal drugs is increasing. There were twice as many deaths from barbiturates in New York City in 1941 as in 1937.[1] In 1945 there were 250 tons of barbiturate drugs used.[2] Next to carbon monoxide, barbiturates are the most frequent source of poisoning, both suicidal and accidental.[3]

Thus, the problem of barbiturate intoxication should be familiar to every physician, especially those in public institutions in which many of these cases are seen.

Treatment of this condition is by no means settled. During the last five years, numerous drugs have been used to counteract barbiturate intoxication.

The first part of this paper will attempt to review some of the newer general concepts of barbiturate intoxication during the last five years. The methods of treatment will be stressed.

The second part of the paper will show the results of the treatment of barbiturate intoxication at the St. Louis County Hospital from 1946 to 1951.

PART I

PHARMACOLOGICAL ACTIONS OF BARBITURATES

Adequate discussion of barbiturate intoxication cannot be attempted without a satisfactory understanding of the actions of barbiturates in the body.

I. *Action of Barbiturates.*—There are four actions of barbiturates which influence the treatment of this condition.

1. Central Nervous System: Barbiturates cause sedation and coma by a depressive action on the cerebrospinal axis.

2. Respiration: Large doses are directly depressant to the medullary center and to a lesser extent to the sino-aortic chemoreceptors. Respiration can be embarrassed also by pulmonary edema or hydrostatic pneumonia. The former is more common early with short acting drugs, the latter late in long acting barbiturate intoxication. Death with barbiturate poisoning is usually due to respiratory failure.

3. Cardiovascular System: Large doses depress the central vasomotor center resulting in peripheral vasodilation and hypotension. Direct action on musculature of smaller blood vessels may produce dilation and excessive contractions may dilate and injure capillary beds so that shock occurs.

4. Renal: There is no direct effect on normal renal function but large doses have antidiuretic action and can inhibit diuresis by action on the hypothalmic-pituitary system. Hypotension and overmedication result in oliguria or anuria.

II. *Absorption, Rate, Excretion.*—The absorption, rate and excretion processes of barbiturates follow.

1. The speed of absorption varies with the individual drugs. Rate is slower with long acting drugs and faster with short acting drugs.

There is no correlation between the degree of depression and the barbiturate level in the central nervous system.

3. There are two methods of elimination: (a) detoxification by the liver; short acting drugs are destroyed primarily by the liver and those not destroyed are excreted by the kidneys; (b) excretion by the kidneys; long and moderate duration barbiturates are excreted by the kidneys which is a slower process.

III. *Classification.*—Classification of the barbiturates as to the length of action[1] follows.

1. Long Action Barbiturates: The drugs last from fifteen to thirty hours; example, phenobarbital and barbital.

2. Immediate Action: The drug lasts from ten to fifteen hours; example, dial, neonal, ipral, alurate.

3. Short Acting Drugs: The drug lasts from four to eight hours; example, nostal, pernoston, amytal, sandoptal, phanodorn, pentobarbital U. S. P. (nembutal), delvinal, ortal, seconal.

4. Ultra Short Acting Drugs, for Anesthesia: The drug lasts fifteen minutes or more; example, epival, pentothal.

The last three groups are destroyed by the liver, therefore poor liver function gives prolonged action.

IV. *Dosage.*—The average adult hypnotic dose for the more common drugs is: phenobarbital, seconal, nembutal, from 0.1 to 0.2 gm.; amytal, from 0.1 to 0.3 gm.; barbital, from 0.3 to 0.5 gm.

Goodman and Gillman[4] state that severe poisoning occurs with from five to ten times the oral hypnotic dose. Fatal dose varies, but with more than fifteen times the hypnotic dose, it is difficult to save the individual.

However, other investigators have thought that the fatal dose is larger. Kempf[5] believes that death rarely occurs unless from 6.5 to 9.7 grams (100 to 150 grains) of barbital or phenobarbital is taken by an average adult. Amytal, 5.8 grams (90 grains), should not cause death unless there is a complication. In an adult, 3.25 grams (50 grains) of seconal or nembutal will not cause death with proper supportive therapy.

SIGNS AND SYMPTOMS OF BARBITURATE POISONING

Excitement, delirium and hallucination may

From the Department of Medicine, St. Louis County Hospital, Clayton, Mo.

occur early. Lethargy, sleep and coma soon follow with large doses.

Respiratory rate becomes slow and the minute volume decreases. There may be Cheyne-Stokes respiration. Anoxia affects the cardiovascular system resulting in capillary dilation, increased permeability and shock.

Hypotension and decrease respiration result in hypostatic pneumonia.

Reflexes usually are depressed and often there is a positive Babinski reaction. The pupils usually react to light and may be constricted or dilated. Occasionally the pupils are pin point and unresponsive.

Blood pressure does not fall until late. Pulse becomes rapid and weak. Low blood pressure and central depression result in suppressed urine formation. Body temperature falls. The skin is often cool, moist and cyanotic.

DIAGNOSIS OF BARBITURATE INTOXICATION

The most information is obtained by the history. The amount of drug is difficult to determine in most instances. The individual who is accustomed to the use of drugs may fail to have a deep sleep. In the twilight zone he may not exhibit normal inhibition and reason and mechanically (automatically) take all remaining tablets. This is called "automatism."

Physical examination may be revealing. Gastric content and urine examination for barbiturates is valuable. A relatively simple method for examination of the urine is described in "Clinical Laboratory Methods and Diagnosis" by Gradwohl.[6] Briefly, add a small portion of alcohol slightly acidulated with hydrochloric acid to the material to be tested and evaporate to a thick syrup. Take up residue with hot water and filter, cool and extract with ether. Evaporate the ether and the barbiturate is in the residue as small needles. Millons reagent gives a gelatinous yellow precipitate. Mercurous nitrate gives a white precipitate. It takes about one and a half hours to do the examination if the reagents are available.

DIFFERENTIAL DIAGNOSIS

Coma may be caused by (1) alcoholism, (2) cranial trauma, (3) syncope, (4) diabetic acidosis, (5) hypoglycemia, (6) cerebrovascular accident, or (7) epilepsy.

Barrett[2] cites a case suspected of being barbiturate poisoning which proved to be a cerebrovascular accident. Convulsant therapy of course is dangerous in such patients.

PROGNOSIS

The prognosis depends on many factors such as the health of the patient, the amount of drug ingested, the specific drug and the interval between ingestion and treatment. The type of therapy is thought to be an important factor. The longer the survival, the better is the chance of eventual recovery.

CAUSE OF DEATH

Early death is usually due to paralysis of the respiratory center. The short acting drugs often are responsible for this type of death. Delayed death may be due to vasomotor collapse and pneumonia.

Cerebral edema with distension of the subarachnoid and cerebral tissue spaces may occur. In fatal cases alterations in the ganglion cells of the brain with neuronaphagia have been noted.

Long standing anoxia has been noted to cause symmetrical necrosis of the globus pallidum and diffuse cerebral and cerebellar injury.[3]

TREATMENT

The treatment of barbiturate poisoning involves generally accepted measures such as supportive therapy and specific analeptic treatment.

Gold[3] at Cornell University Medical College has noted four groups of barbiturate poisoning, as far as treatment is concerned: Group 1 is the patient who recovers without treatment, needing only general nursing care. Group 2 is the patient who dies regardless of how intensive and expert is the treatment; so large a dose is taken that no antidote or method of treatment can save the patient. Group 3 is the patient who recovers only with expert management. Group 4 is the patient who dies because of the therapy.

I. *Generally Accepted Treatment.*—This includes supportive treatment and nonanaleptic drug measures.

1. Supportive Therapy: Some physicians[7] believe that supportive therapy and measures to prevent complications are the best means in most individuals. Analeptic therapy should be used only in cases that are not doing well. Supportive therapy generally includes the following measures:

a. Turning the patient every two to four hours.

b. Trendelenberg position.

c. Airway inserted; remove, clean and replace after twelve hours.

d. Suctioning of accumulated mucus at least every hour; bronchoscopy or tracheotomy if necessary.

e. Oxygen by mask or nasal catheter, 6 liters per minute. Some physicians use O_2-CO_2 combinations. Artificial respiration as necessary.

f. Warm coverings.

g. Intravenous fluids such as 2 liters 5 per cent glucose in saline solution and 1 liter 5 per cent glucose in water for twenty-four hours. In prolonged coma add intravenous amino acids, 70 grams daily. Not more than 20 grams should be given in two hours to prevent excess of urinary spill. Thiamine 5 mg., riboflavin 5 mg., nicotine acid 50 mg. should be used three times daily. Vitamin C in a dose of 100 mg. three times a day

should be given because some believe that this will shorten the narcosis caused by short acting barbiturates.

h. Other nursing care measures such as careful oral hygiene, padding pressure points, avoiding decubitus, protecting bulla and watching for injury.

i. Retention catheter which should be changed every ten hours.

2. Nonanaleptic Drug Measures: These include the following:

a. Atropine to dry secretions may cause inspissation of mucous plugs.

b. There has been some difference of opinion as to whether gastric lavage should be done in the comatose patient. Some physicians[1, 8, 9, 10] prefer to have gastric lavage performed even in the comatose patient. Warm water or potassium permanganate 1/2000 to 1/5000 is used. Potassium permanganate apparently has some value against dial and alurate but not against other barbiturates. Gastric lavage empties the atonic stomach and removes any remaining drug. Analysis of the contents can be done. An empty stomach prevents aspiration. Massive doses of barbiturate could cause irritation of the pylorus with reflex closure. So perhaps gastric lavage even several hours afterward could accomplish something. Several ounces of a saline cathartic has been left in the stomach often.

However, other workers in this field are definitely against gastric lavage in coma.[2, 3, 11] Absorption from the stomach is usually rapid unless the barbiturate is taken after a meal. Lavage can be a useless and dangerous procedure.

The value of gastric analysis in acute poisoning was discussed in an editorial in the *Journal of the American Medical Association* a few years ago.[19] It was considered by Harstad, Moller and Simesen of Copenhagen to be an inefficient and valueless procedure in acute poisoning. However, the efficiency was found to be increased with lavage with small volumes of fluid. It promotes passage of the poison into the intestines. Four hours after ingestion the lavage was only exceptionally effective and was thought to be contraindicated in the unconscious patient.

c. Colonic lavage may be a valuable procedure. Brazeley and Garrand[12] cite a case of phenobarbital poisoning in which 50 per cent of the ingested drug was removed in this manner.

d. If circulatory collapse develops, plasma, blood and isotonic salt can be used as desired. Desoxyephedrine or neosynephrine can be used. Ephedrine, 50 mg. intravenously, or 50 mg. intramuscularly, three times a day often is used.

e. Antibiotics can be used if the temperature rises. Penicillin, 50,000 units every three hours, often is given. Some physicians give prophylactic penicillin to comatose patients.

II. *Specific Analeptic Measures.*—Adults usually recover without specific therapy if they took orally between 1 and 2 grams of any common barbiturate.[3] Analeptic therapy may depend on how deep is the coma or whether the drug has been absorbed completely. The depth of coma is determined by such findings as the state of consciousness, character of respiration, blood pressure, heart rate, condition of the skin, cyanosis, response to pain, pupil width and reflexes (pupillary, tendon jerks, swallowing). If it has been from six to eight hours since ingestion of the drug and if the patient is doing well, some physicians do not give specific drugs because deepening narcosis is unlikely.

Alexander[13] states that since in most cases the history of dosage is unreliable and it is impossible to determine the time elapsed after ingestion, the degree of depression may be difficult to evaluate. Therefore, he advises a test dose of 4 cc. of 10 per cent aqueous metrazol rapidly intravenously before other therapy. Response is graded as follows: Grade 1 patients respond by moving, opening eyes or answering questions. Grade 2 patients respond with rise in blood pressure, stimulation of respiration or increased muscle tone or reflex. Grade 3 patients give no response. The effectiveness of therapy should be determined by response of grade 3 group.

1. Analeptic Drugs: Many drugs have been used during the years for barbiturate poisoning. Picrotoxin, benzedrine, metrazol and coramine are the most commonly used drugs at the present time. Strychnine is apparently only seldom employed. Caffeine sodium benzoate is effective in stimulating a depressed respiratory center. Ephedrine is used to raise the blood pressure and it also stimulates the respiratory center.

2. Nonconvulsive Electrotherapy: Nonconvulsive electrotherapy is now being employed often. The site of action of the various analeptic drugs should be known to all who use them. They are as follows:

a. Picrotoxin is a powerful central nervous system stimulant. It stimulates the cortex but has a more prominent action on the midbrain and medulla. Stimulation of the emesis, respiratory and vasomotor center occurs.

b. Benzedrine stimulates the medullary respiratory center, lessens central depression and stimulates the central nervous system. Benzedrine also dilates the bronchioles. Goodman and Gilman[4] state that benzedrine lessens the degree of depression but lacks the potent respiratory stimulant effect of caffeine and ephedrine. They state that it could not be relied on alone. It may be proven useful in conjunction with other measures in poisoning with depressant drugs.

c. Metrazol stimulates all parts of the cerebrospinal axis, especially the higher centers. Medullary stimulation results in respiration, vasomotor and vagal center stimulation. Reflex activity of the cord is increased. It counteracts the depressive effect of hypnotics on the higher center.

d. Cormaine is a respiratory stimulant reflexly by its action on the chemoreceptor carotid body mechanism. It acts more powerfully on a depressed respiratory center than a normal center. It acts as an analeptic but less effectively than picrotoxin or metrazol. It is good only for circulatory depression of central origin.

e. Strychnine stimulates the entire central nervous system, especially the spinal cord. Strychnine acts by sensitizing the central nervous system such as the vasomotor and respiratory center of the medulla so that they respond in an exaggerated manner to impulses; there is no direct stimulatory action.

f. Caffeine-sodium benzoate is a powerful central nervous system stimulant, all portions—cortex and medullary center. It gives direct stimulation of respiration.

g. Ephedrine not only stimulates the medullary vasomotor-respiratory centers but exerts an analeptic effect on higher cerebral centers and thus tends to lessen the degree of depression.

Summary: Stimulants of a depressed respiratory center are (1) caffeine sodium benzoate, (2) coramine, (3) metrazol, (4) picrotoxin, (5) ephedrine, (6) strychnine. All respiratory stimulants improve respiration and thus the cardiovascular system. Most of them increase vasomotor tone by a central action.

SUMMARY OF RESULTS WITH THE VARIOUS ANALEPTIC DRUGS

Commonly Used Drugs

1. *Picrotoxin.*—Picrotoxin is thought by many to be the drug of choice for barbiturate intoxication. Picrotoxin has the most sustained effectiveness. It should be employed early and in adequate amounts. Lack of familiarity with the drug and fear of its potency is responsible for the reluctance to use it.

Gold[3] seems to prefer picrotoxin. He cites some general rules to be followed: (1) Withhold picrotoxin or convulsants if the patient has such reflexes as holding breath, increased breathing, pupil or deep tendon reflexes. (2) Give it to all patients without reflexes. (3) Patients in coma for more than forty hours with a rapid acting barbiturate have probably taken a lethal dose. Give specific drugs. If respiration is depressed caffeine sodium benzoate ½ gram intravenously or intramuscularly every thirty minutes is of value. It rarely gives secondary depression of respiration and there is little danger of convulsions. Neosynephrine and paredrine, he states, in doses of from 10 to 20 mg. intramuscularly every thirty minutes are useful to maintain blood pressure. These agents cause no acceleration of the heart and no secondary vasodepression.

Picrotoxin can be given by the fractionated method or the continuous intravenous method.

Fractionated Method: Picrotoxin has been given in doses of from 6 to 9 milligram intravenously every ten to fifteen minutes into the tubing of an intravenous infusion. Parenteral doses of from 3 to 6 mg. intramuscularly every fifteen to thirty minutes can be used, especially after the patient is brought to proper subconvulsant level. Most physicians recommend thirty minute intervals between doses because small doses of picrotoxin develop action slowly. Early doses should be given at shorter intervals and later doses should be given at longer intervals. The action of picrotoxin is sometimes delayed for ten minutes. The initial response to picrotoxin with long acting drugs is slower, therefore, give it in small amounts to prevent cumulative effect. Picrotoxin reaches a peak action in twenty minutes and effect ends in about two hours.

Continuous Intravenous Method: Picrotoxin can be given as a continuous intravenous dose by using 1 cc. of a 1/1000 aqueous solution intravenously every minute. This provides a dose of 1 mg. per minute. The solution can be prepared by dissolving 1 gm. of the powder in 1,000 cc. of an aqueous solution and sterilizing by boiling.

Give picrotoxin until corneal, swallowing, tendon reflexes and twitching of face occur. A convulsion need not end treatment. Most convulsions last from one to two minutes and no treatment is necessary. Occasionally 2 to 5 cc. of sodium pentothal intravenously is needed for control. Do not discontinue the picrotoxin if a convulsion occurs.[14] If the drug is stopped the convulsion may lead to a coma which together with the barbiturate coma may be fatal. Lower the dosage until the convulsion passes. After motor activity returns give picrotoxin at longer intervals parenterally until the patient is completely recovered.

As much as 1 to 3 grams of picrotoxin have been used for barbiturate poisoning.[9] A total of 1,745 milligrams of picrotoxin was given to a patient who was unconscious for four and a half days.[15] The dose was tolerated without side effects. The patient recovered. The amount of picrotoxin needed is variable and depends on the amount and type of barbiturate ingested as well as the time elapsed after ingestion and start of treatment.

Metrazol has been used together with picrotoxin because of the former's more immediate action of respiratory stimulation and effect on the higher center. A dose of 1 cc. of 10 per cent aqueous solution of metrazol could be given intravenously every five minutes until twitching occurred and then the intervals prolonged.

2. *Benzedrine.*—Freireich and Landsberg[16] report good results with intravenous benzedrine. They point out that if the quantity of barbiturate is large the amount of picrotoxin needed is so great that convulsions appear.

Usually 10 milligrams of intravenous benzedrine are given immediately on admission. Then 40 milligrams are given and then 20 milligrams every thirty minutes. Pulse and blood pressure

should be taken before each dose. Clinically there is a rise of blood pressure and increase in rate and fullness of the pulse. Four hundred milligrams intravenously have been given without toxic effects.

Of fourteen patients treated by Freireich and Landsberg only one death occurred, a mortality of 7.1 per cent. They believe that active treatment should be given to even those patients sleeping mildly.

3. *Metrazol.*—Jones, Dooley and Murphy[11] believe the treatment of choice in barbiturate intoxication is metrazol. If diagnosis is established, 5 cc. of metrazol is given intravenously, 10 cc. intravenously in fifteen minutes unless reflexes return, then 20 cc. intravenously every thirty minutes until reflexes return and small doses intramuscularly until full consciousness. Metrazol is almost as powerful as picrotoxin but there is no latent period, maximal effect occurring almost immediately with no prolonged effect. It is eliminated in from thirty to sixty minutes. One can give large doses every thirty minutes without cumulative effect.

In twenty-nine cases in coma mortality was 10.7 per cent but patients with severe complications comprised 32 per cent of the total. The three deaths were due to cardiac congestive failure, probably as a result of fluid therapy and pneumonia. They concluded that metrazol was safe in large quantities. It can be used by a physician anywhere for immediate relief. There were no deaths due solely to the drug.

4. *Coramine.*—Watts and Ruthberg[8] have used coramine in barbiturate poisoning. It is said to be both nontoxic and effective with no cumulative effect. Coramine was compared with picrotoxin. In no case in which coramine failed did picrotoxin work; in several cases when picrotoxin was not working coramine helped. They recommend 10 cc. of 25 per cent coramine intravenously every five minutes for the first hour. In addition, a constant amount should be given by intravenous drip so that a base line amount of 10 cc. every hour could be administered. After the first hour, give a booster dose of 10 cc. every one hour; a booster dose every one half hour can be given in severe cases. Therapy should be continued until the patient is responding to stimuli such as answering questions, return of reflexes and moving spontaneously. They also reported a group treated with coramine plus a picrotoxin booster dose of 3 milligrams every fifteen minutes.

Watts and Ruthberg grade patients into four groups on the basis of consciousness, tendon, corneal and swallowing reflexes, pupil size and coma. In group number four (those in deep coma with pin point pupils and absent reflexes) all the fatalities occurred. Loss of corneal reflex distinguished group three from group four. Loss of corneal reflex indicated a poor prognosis. Sixty per cent of individuals with absent corneal reflex died.

Of ten cases in group four, six deaths occurred. Four had been treated with coramine alone and two with mixed treatment.

In a total of ninety-nine cases during several years Watts and Ruthberg report a mortality of 9.1 per cent. Alternate patients were treated with picrotoxin or coramine. Some had both if heroic measures were needed.

Less Commonly Used Drugs

1. *Sodium Succinate.*—Sodium succinate has been used only recently as an analeptic drug for barbiturate poisoning in man. The mode and site of action in barbiturate poisoning is unknown. The probable action, states Barrett,[2] is concerned with tissue respiration and the roles of succinoxidose and cytochrome oxidase. Possibly reflex mechanisms are incurred because of the hypertonicity of the material.

It has been stated[3] that barbiturates interfere with dehydrogenase activity blocking intermediary sugar metabolism. The oxidation of glucose, pyruvate and lactate is impaired but not succinate. Sodium succinate seemed to reverse barbiturate poisoning in animals. Sodium succinate, it is believed, is of benefit not due to the succinate radical since the same effect is said to be obtained with sodium bicarbonate. The sodium ion overcomes the acidosis produced by anoxia and increased lactic acid production.

Barrett[2] uses a 30 per cent aqueous solution of hydrated salt of sodium succinate. It is given intravenously. The first dose of 3 to 5 cc. is injected rapidly at the rate of 1 cc. per second and the remainder is injected slowly. There is no fixed dose and it is given intermittently. Delay for twenty seconds after the initial dose. The patient usually coughs once or twice in this interval. Cough means an adequate initial dose. If no cough, repeat the dose. After cough there is usually an increase in depth of respiration and a crimson flush ("succinate flush") in the blush areas.

Intravenous sodium succinate is continued until a definite analeptic response, i.e., groaning, voluntary movement, opening of eyes, occurs. Occasionally from 30 to 45 grams (100 to 150 cc.) is needed within fifteen to twenty minutes.

Barrett states that in supposed or assumed barbiturate intoxication a harmless drug is needed. Sodium succinate can be given in any stage of narcosis or in wide awake individuals. The analeptic effect is related to the depth of narcosis—the greater the need, the more is the effect. Patients never get convulsions or excitement beyond the status quo.

Fourteen cases with narcosis were treated with sodium succinate by Barrett without any deaths.

2. *Strychnine.*—Strychnine has been used in doses of 2 milligrams or 1/30 grain subcutaneously

at intervals of one to two hours. It was noted that it caused hyperexcitability and convulsions in narcotized animals but has not been effective in saving lives. It is seldom used at present.

ELECTRO STIMULATION

The treatment of barbiturate poisoning by nonconvulsive electro stimulation has gained popularity. Robie[17] attaches electrodes of the Reiter electro stimulator to both temples. Modulation is low at first, then raised. From 5 to 7 milliamperes are used to begin and gradually lowered and stimulation is stopped for one to three minutes every half hour.

Clinically, there is noted an increased amplitude of breathing but coma may be unaffected. Keep the airway clear. Benzedrine intravenously can be used as an adjunct but with smaller doses. Vary the milliamperes from 2 to 5 as the respiratory amplitude varies. It may require from two to eight hours of stimulation.

Robie believes electro stimulation causes faster recovery in period of hours. Good chances of recovery, he states, can be had even with ordinary lethal doses of barbiturates.

DEATH

The death of a patient with barbiturate poisoning is the direct result of one or more of the following conditions:

1. Pulmonary complications such as atelectasis, pulmonary edema, bronchopneumonia and abscess. General nursing care, antibiotics and anti-pulmonary edema measures such as digitalis and tourniquets may be necessary.

2. In circulatory collapse general nursing care, fluids and vasopressor drugs are important.

3. In cerebral edema with prolonged anoxia, hypertonic glucose such as 50 per cent glucose in water may be used. It restores normal blood volume, promotes urine formation, is nourishing and may aid in combating pulmonary edema. Other measures include salt free albumin and lumbar puncture. Lumbar puncture[18] with the removal of from 30 to 60 cc. of spinal fluid every three hours may relieve intracranial pressure and remove the drug from the central nervous system.

4. Respiratory depression is due to direct depression of the drug.

Gastric lavage and intravenous fluids to increase the urinary formulation (however, the cardiac status should be carefully observed) and analeptic drugs should be used. Diuretics have been suggested to increase the elimination of the barbiturates but Goodman and Gilman[4] state that diuretic drugs (such as mercurials) are not indicated.

PART II

BARBITURATE POISONING AT THE ST. LOUIS COUNTY HOSPITAL 1946-1951

During the last five years there have been sixty-eight cases of barbiturate intoxication admitted to the medical service of the St. Louis County Hospital. Of these patients fifty-eight were admitted in coma. These patients had absent tendon reflexes and did not react to pain. The majority had absent corneal reflexes. Ten patients were sleepy but conscious.

AGE RANGE OF SIXTY-EIGHT PATIENTS

There were fifty-five females and thirteen males in the group. The age range of the entire group was 10 to 70 years (see table 1). Approximately

TABLE 1. AGE GROUP OF 68 CASES OF BARBITURATE INTOXICATION

	Total	Male		Female	
		Number	Per cent	Number	Per cent
10-20	6			6	
21-20	11			11	
31-40	26	7	26.9	19	73.1
41-50	14	5	35.7	9	64.3
51-60	8	1	12.5	7	87.5
61-70	3			3	

two-fifths of the patients were between 31 and 40 years of age. Three-fourths were between 21 and 50 years of age. The females comprised 80.9 per cent, 13 males comprised 19.1 per cent.

The greatest percentage of female patients was between 21 and 50 years of age. More than 50 per cent occurred in the third and fourth decade of life. Almost all the males were in the fourth and fifth decade.

TYPE OF DRUG

In many cases the type of drug ingested is unknown to the patient. However, in 81 per cent of the cases seen at the County Hospital the drug was known (see table 2).

TABLE 2. TYPE OF BARBITURATE INGESTED

	Sixty-eight Cases		
Phenobarbital	20	Amytal-Seconal	3
Seconal	12	Delvinal	1
Nembutal	10	Meberol	1
Tuinal	5	Unknown	13
Amytal	3	Total	68

AMOUNT OF DRUG

The amount of drug taken is based on the patient's statement, and is often inaccurate. Many patients do not know how many pills were taken. One patient in the comatose group who died was said to have taken 150 grains of phenobarbital. Another patient took 179 grains of amytal. In general, the comatose group probably took 20 grains or more of barbiturate. The condition of the patient on admission is influenced by the time elapsed from ingestion to admission. The maximum effect might have passed if entrance to the hospital was delayed. The noncomatose group probably took less than 25 grains of barbiturate.

NUMBER HOURS UNCONSCIOUS

Duration of unconsciousness before admission is difficult to determine in most cases. The range varied from thirty minutes to hours. One patient was thought to have been unconscious as long as 24 hours.

HISTORY

The history in most cases was simply that the patient was found unconscious with an empty bottle of pills nearby. Some individuals were awake enough when first seen to explain what they had done. History was obtained in most cases from friends or relatives. A history of accidental ingestion of the drug was not obtained in any case. Suicide was apparently intended in all cases. A prior suicide attempt was admitted in only two cases.

PHYSICAL EXAMINATION

The pupils reacted to light even though constricted in most of the fifty-eight comatose cases. The pupils were more often constricted then dilated in these cases. The blood pressure ranged from (unobtainable) 60/42 to 170/90. The blood pressure was below 100 millimeters mercury in only fourteen cases (24.1 per cent). All cases had tendon areflexia. Corneal reflexes were obsent in most cases. No definite pathologic toe sign was elicited in any case.

LABORATORY EXAMINATION

There were no characteristic changes in the blood counts of patients with barbiturate intoxication. Examination of the gastric contents for barbiturates was seldom done. Only eleven of the fifty-eight comatose cases (almost 20 per cent) had a urine examination for barbiturates. Since coma from other conditions is at times indistinguishable from the coma with barbiturates, a routine urine barbiturate test should be obtained, especially if the history of ingestion is not definite. It has been reported that individuals with cerebral vascular accidents were treated for barbiturate intoxication by mistake.

The urine examination for barbiturates is not unusually complicated and can be performed in about one and one-half hours if proper reagents are available.

PLAN OF THERAPY

At the St. Louis County Hospital during the last five years there has been no routine treatment for barbiturate intoxication. In general, the comatose individual may have a gastric lavage with potassium permanganate or warm water on entrance to the emergency room. A cathartic may be instilled. If several hours have elapsed after ingestion, no lavage is performed because of the danger of aspiration pneumonia. The patient is usually given an initial dose of drug (table 3) in the emergency room and then medication continued on the ward. The patient's therapy includes:

1. General measures as (a) frequent suctioning of accumulated mucus, (b) maintenance of adequate airway, (c) oxygen with or without carbon dioxide, (d) periodic turning of patient, (e) adequate covering for the patient.
2. Analeptic therapy includes such drugs as (a) picrotoxin, (b) caffeine sodium benzoate, (c) metrazol, (d) coramine, (e) benzedrine, (f) on one occasion sodium succinate was used.
3. Ephedrine and rarely adrenalin were used to maintain the patient's blood pressure.
4. Atropine has been used to dry secretions.
5. Adequate fluids are provided in the form of glucose in saline or H_2O with vitamins.
6. Antibiotic therapy was given in seventeen of the fifty-eight comatose individuals (approximately 30 per cent). Penicillin was given in almost every case.

Thus, picrotoxin and caffeine sodium benzoate was used together with or without other agents in approximately one-third of the cases.

TABLE 3. ANALEPTIC DRUG USED IN FIFTY-EIGHT COMATOSE INDIVIDUALS WITH BARBITURATE INTOXICATION

1. Picrotoxin alone	11
2. Caffeine Sodium Benzoate alone	10
3. Combination 1 & 2 with or without combination with other agents	20
4. Benzedrine with or without combination with other agents	9
5. Coramine with or without combination with other agents	10
6. Metrazol with or without combination with other agents	4
7. Sodium Succinate with or without combination with other agents	1

COMPLICATIONS

In the group of fifty-eight comatose patients there developed only three cases of pneumonia. One patient with pneumonia died but this patient also had ingested a mercury compound.

There were four cases of excessive alcoholic intake associated with the barbiturate poisoning.

A mental disturbance was diagnosed in only eleven cases. However, every patient with barbiturate intoxication as a result of attempted suicide must be mentally disturbed. But frequently these patients left the hospital as soon as the acute episode was over. Thus, only eleven patients had sufficient psychic evaluation to make a diagnosis.

TABLE 4. MENTAL DISTURBANCE IN ELEVEN CASES WITH BARBITURATE INTOXICATION

Reactive depression	5	Anxiety state	1
Psychopathic personality	2	Simple adult maladjustment	1
Mixed psychoneurosis	1	Psychosis	1

MORTALITY

There was a mortality of 6.9 per cent in the fifty-eight comatose individuals; four of these

patients died. A summary of the course of these patients follows.

REPORT OF CASES

Case 1. A 58 year old female had cancerphobia and depression and a goiter, nontoxic, for many years. She was unconscious for six hours after ingestion of 15 plus grains of nembutal. Examination revealed the blood pressure to be 70/50, no corneal or other reflexes. The heart beat stopped but was restored with adrenalin. Urine was barbiturate positive. She was given benzedrine, caffeine, sodium benzoate, picrotoxin and penicillin. The temperature rose to 102 F. and the patient died after three days. There was no autopsy.

Case 2. A 44 year old male was unconscious for two hours before admission. He had ingested 150 grain (?) phenobarbital. This dose was thought unlikely. Examination revealed a blood pressure of 90/70. Pupils were pin point without reaction to light, no corneal or other reflexes. He was given picrotoxin intravenously until one minute convulsion ensued. Corneal reflex returned. However, rales developed in the lungs. The blood pressure dropped in spite of ephedrine. The patient was digitalized without avail and succumbed two days after admission. There was no autopsy.

Case 3. A 56 year old male was found comatose. About fourteen phenobarbital tablets had been ingested. Examination showed blood pressure of 160/60, depressed reflexes, pupils dilated. The blood pressure fell to 70/50. The pupils became pin point with fixed eyes. Respiration was depressed. The patient was given picrotoxin and caffeine sodium benzoate but died after eight hours.

Autopsy showed edema of the upper lobes of both lungs; edema and congestion of the middle and left lower lobes of the right lung and the left lower lobe; congestion of the jejunum and renals.

Case 4. A 26 year old white female was admitted comatose with a history of probable barbiturate intoxication. She was said to have ingested twenty-eight "sleeping pills" several hours before admission. She had a history of two right radical mastoidectomies with residual right facial paralysis. Blood pressure was 100/70 and she was totally unconscious. Pupils were dilated but reacted to light and there was no corneal reflex. The right tympanic membrane was hemorrhagic with purulent material in the canal. There was areflexia. She was treated with intensive coramine routine as outlined by Watts and Ruthberg.[8] She was given coramine intravenously to a total dose of at least 300 cc. The patient had hematemesis of about 250 cc. of coffee ground material. She was given picrotoxin, adrenal cortex, glucose in saline solution and whole blood, six units. The blood pressure rose to 130/75. Neosynephrine was used to maintain blood pressure and she was given 10 cc. sodium succinate. Gastric lavage showed barbiturate and mercury. She was given BAL. The patient developed renal shut down, Cheyne-Stokes respiration and expired one day after admission. Temperature before death rose to 102.2 F. The patient had been given penicillin.

Autopsy showed acute gastritis, necrotizing enteritis involving the sigmoid and rectum, petechiae in the right renal pelvis, local atelectasis in all but the right middle lobe, cloudy swelling of the liver and kidneys.

TIME OF DISCHARGE

The majority of patients were discharged soon after the acute episode of barbiturate poisoning. Almost one-half of the comatose patients were discharged within two days of admission (see table 5).

TABLE 5. TIME OF DISCHARGE 54 COMATOSE PATIENTS

1. Same Day as Admission	7	4. Three days	8
2. One day	14	5. Four days	5
3. Two days	11	6. Five days	4
7. Six days or more	5		

DISCUSSION

In the period of 1946 to 1951 there have been sixty-eight cases of barbiturate poisoning admitted to the St. Louis County Hospital. Fifty-eight cases have been in coma. Four of these patients died, a mortality of 6.9 per cent.

Of the four patients who died all were seriously intoxicated. One patient had poisoning with a mercury compound as well as barbiturate poisoning. It seems doubtful that any method of therapy would have saved them. Of course, more intensive therapy or different means of therapy might have been effective.

There has been no special plan for barbiturate poisoning at the St. Louis County Hospital, yet mortality using a variety of drugs is not excessive.

Every case of barbiturate poisoning should be treated as an individual but certain generalizations could be made.

1. The history should include (1) amount of drug, (2) type of drug, (3) time of ingestion, (4) emesis after ingestion, (5) time of last meal, (6) period of unconsciousness, (7) therapy if any prior to admission. The physician or pharmacist who attended the patient can be contacted.

2. Periodic changes in the patient's condition should be recorded, in chart form if desired. Important signs are (1) temperature, pulse, respiration and blood pressure, (2) color and condition of skin and mucous membranes, (3) reaction to pain, (4) reflexes, pupil, corneal, swallowing, tendon.

3. Gastric lavage should not be performed in an unconscious patient. If four hours have elapsed since ingestion, lavage is probably worthless. Gastric contents should be saved and sent to the laboratory to be tested for barbiturates.

4. A routine urine examination for barbiturate is desirable.

5. A test dose of 4 cc. metrazol intravenously as suggested by Alexander[13] seems valuable. Patients are divided into three groups. (1) For patients in group one supportive therapy as outlined is all that is necessary in most cases. Caffeine sodium benzoate and vasopressor drugs such as neosynephrine or ephedrine can be used as indicated to maintain adequate respiratory exchange and blood pressure. (2) Supportive ther-

apy probably is all that is necessary for patients in group two. Benzedrine or metrazol as outlined can be given if the patient seems to be doing poorly. (3) Group three patients are those who need the most intensive therapy. Picrotoxin, metrazol or benzedrine should be used intensively and in adequate amounts. Picrotoxin is probably the best drug to use in these cases. A combination of picrotoxin and metrazol as outlined would seem to be worthwhile. (4) Pulmonary, cerebral or vascular complications during therapy should be early and vigorously treated. If coma is longer than 24 hours, prophylactic penicillin seems indicated.

SUMMARY

The first part of the paper reviewed the general aspects of barbiturate intoxication. The pharmacology, action, signs and symptoms and diagnostic features of barbiturate intoxication were presented. Treatment emphasizing both general measures and specific analeptic measures were reviewed in some detail. The more common methods of treatment used during the last five years were discussed.

The second part of the paper presented the results of treatment of barbiturate intoxication at the St. Louis County Hospital from 1946 to 1951.

CONCLUSION

The mortality rate in fifty-eight comatose individuals treated at the St. Louis County Hospital from 1946 to 1951 was 6.9 per cent. Supportive therapy was a major part of the treatment. A variety of analeptic drugs was used.

The commonly reported mortality in the treatment of barbiturate poisoning has varied between 5 and 10.7 per cent.[1, 8, 11]

The results at St. Louis County Hospital suggest that in most cases supportive therapy and any stimulant if correctly used will be likely to succeed in barbiturate intoxication.

A routine for the treatment of barbiturate intoxication was presented.

St. Louis County Hospital.

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BOOK REVIEW

METHODS IN MEDICINE, The Manual of the Medical Service of George Dock, M.D., Sc.D., Formerly Professor of Medicine, Washington University School of Medicine; Formerly Physician-in-Chief, Robert A. Barnes Hospital, St. Louis. A comprehensive outline for clinical investigation, management and treatment of patients with various medical disorders by George R. Herrmann, M.D., Ph.D., Professor of Medicine, University of Texas Medical Branch at Galveston; Director of the Cardiovascular Service and Heart Station, University of Texas Hospitals; Consultant in Medicine to the Surgeon General, U. S. Army; Consultant in Vascular Diseases to the Marine Hospital, U.S.P.H.S. Second Edition, Completely Revised. C. V. Mosby Company. St. Louis. 1950. Price $7.50.

This book, based on clinical teachings of Dr. George Dock, is a good book, but much of it is so technical it should be available for reference rather than study; it is also excellent for the laboratory specialist. As an illustration—a little more than four pages describe clinical impressions, whereas 145 pages deal largely with laboratory studies. Special studies and special tests are emphasized. The author devotes another 165 pages to special studies to be made in patients with pulmonary, cardiac and arterial and digestive diseases. Genito-urinary ailments and neurologic disorders are covered briefly. In emergency procedures many valuable suggestions are given relating to injuries, poisoning, heart attacks, hemorrhages and other serious ailments. This again illustrates the value of the book, if available for ready reference.

General therapeutic methods including diets, use of antibiotics, insulin and recently developed drugs (1950) for treatment of rheumatoid arthritis are discussed concisely. Studies relating to shock and transfusions are not emphasized. Discussions on hormones, especially those so widely and unfortunately misused, are minimized. The discussion of Dr. Dock's twenty drugs is especially valuable. More emphasis could have been placed on intelligent writing of prescriptions.

The chapter dealing with dietetic methods is especially commendable. It is comprehensive and helpful in this neglected field. The working outline table of contents is unusually exhaustive and much more valuable than the ordinary index. Dr. Hermann has produced a remarkably fine book. D. T. M.



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Case Report

AN UNSTABLE WOLFF-PARKINSON-WHITE SYNDROME

CASE REPORT

MICHAEL BERNREITER, M.D.
KANSAS CITY
AND
RICHARD OWENS, M.D.
KANSAS CITY

THE ELECTROCARDIOGRAPHIC syndrome reported is believed to result from the presence of an accessory atrioventricular conducting structure, the bundle of Kent or a band of conducting tissue between auricle and ventricle.

The essential diagnostic feature is a distinctive electrocardiogram presenting a short P-R interval, usually less than .11 seconds and a wide QRS complex, usually more than .10 seconds. The short P-R interval is due to the more direct pathway through the accessory bundle from auricle to

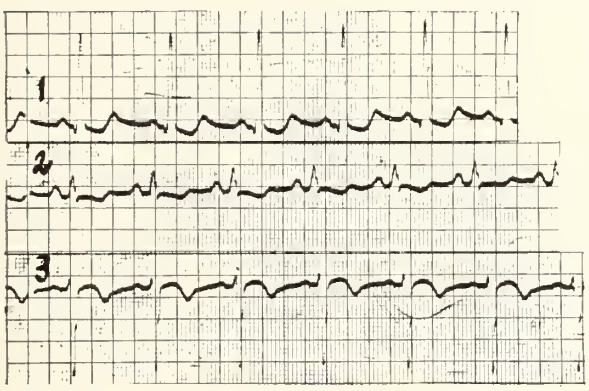


Fig. 1. Leads I, II and III showing regular sinus mechanism and normal atrioventricular conduction.

ventricle, while the prolongation of the QRS complex results from premature activation of one ventricle and the abnormal course of depolarization originating through the apparent pathway.

The syndrome is most commonly encountered in young adult males. The essential clinical feature is the tendency to recurrent attacks of paroxysmal auricular tachycardia. Aside from this tendency most of the patients are apparently in good health. Associated organic heart disease occasionally has been reported and a few deaths have occurred suddenly in the course of an attack of paroxysmal tachycardia.

REPORT OF A CASE

A 56 year old white female was admitted to the hospital complaining of a lump in the left breast which she discovered about six weeks previously.

From the Department of Cardiology, St. Mary's Hospital, Kansas City.

The positive findings on physical examination were a lump in the left breast with palpable lymph nodes in the left axilla. She was obviously obese and her blood pressure was 220/116. The temperature, pulse and respiration were within normal limits. The blood

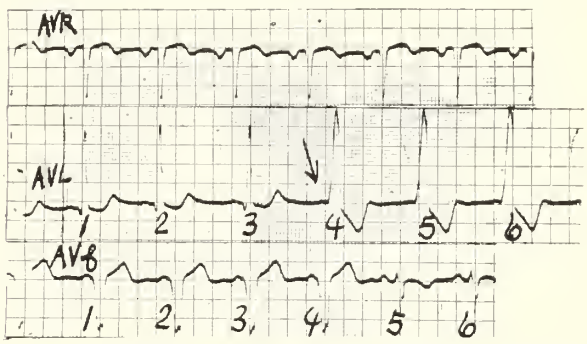


Fig. 2. aVR shows normal AV conduction. In aVL complexes 1, 2 and 3 are normal but complexes 4, 5 and 6 show the Wolff-Parkinson-White syndrome. In aVF complexes 1, 2, 3 and 4 continue to manifest the Wolff-Parkinson-White syndrome with reversal to normal conduction in complexes 5 and 6.

count, urinalysis and blood chemistry showed nothing unusual.

A routine preoperative electrocardiogram was of interest and is the reason for reporting this case. Leads I, II and III showed a regular sinus mechanism (fig. 1). This mechanism prevailed throughout aVR (fig. 2) and the beginning of aVL but changed to the Wolff-Parkinson-White syndrome with the fourth beat (fig. 2. Arrow aVL). The first four complexes in aVF are of the short P-R, long QRS type but reversion to normal conduction occurs with the fifth beat (fig. 2. aVF).

In V-1 complexes one, three, four, five and seven are under the influence of the accessory bundle while

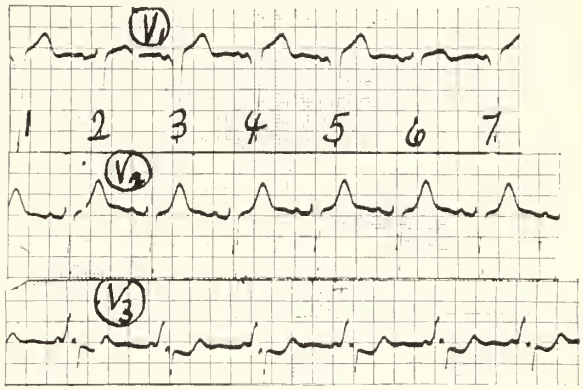


Fig. 3. In V-1 complexes 1, 3, 4, 5 and 7 are under the influence of the accessory bundle, while complexes 2 and 6 show normal conduction. V-2 shows normal PR:QRS relationship throughout while all complexes in V-3 show aberrant conduction (Short PR, long QRS interval).

complexes two and six again show normal conduction (fig. 3. V-1). Throughout V-2 there is a normal PR:QRS relationship (fig. 3. V-2), while the entire Lead V-3 shows the Wolff-Parkinson-White syndrome (fig. 3. V-3). In the first five beats of V-4 there is

reversion to normal PR and QRS duration while the last two beats show abnormal conduction (fig. 4. V-4).

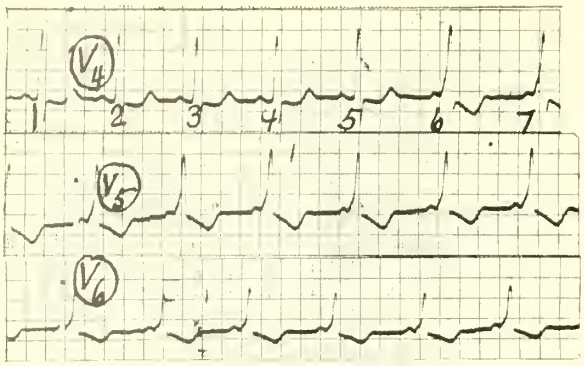


Fig. 4. In V-4 complexes 1, 2, 3, 4 and 5 show normal conduction but complexes 5 and 7 reverse to the Wolff-Parkinson-White syndrome. All complexes in V-5 and V-6 show aberrant conduction through the accessory bundle (Wolff-Parkinson-White syndrome).

V-5 and V-6 show the Wolff-Parkinson-White syndrome in all complexes (fig. 4. V-5 and V-6).

SUMMARY

A case of unstable Wolff-Parkinson-White syndrome is presented. The patient entered the hospital with the chief complaint of a lump in the left breast which was subsequently removed and found to be malignant. She had a marked hypertension but no cardiovascular symptoms except that in the past she had occasional attacks of fast and pounding heart. A preoperative routine electrocardiogram showed an unstable Wolff-Parkinson-White syndrome, changing spontaneously from normal to abnormal conduction while the conventional twelve lead electrocardiogram was taken. The patient was at complete rest and has received no medication. All complexes under the influence of the accessory bundle show a short PR and prolonged QRS interval with typical slurring of the initial portion of the R wave.

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PRESIDENT'S PAGE

Representatives from six Midwestern states attended a meeting of the American Medical Association Committee on Legislation which was held in Omaha, Nebraska, on November 9. Joseph D. McCarthy, M.D., Omaha, a member of the Committee, presided. Those present were privileged to meet the new Director of the A. M. A. Washington office, Frank E. Wilson, M.D.

Dr. Wilson reported on the activities of the Washington office and discussed legislation which may affect the medical profession when the new Congress convenes in January.



One bill which is to be considered by the new Congress should prove of great interest to the profession. The Keogh-Reed bills which failed to pass in the last Congress will again be introduced. The legislation provides for federal income tax deductions for the self employed, including the medical profession, who purchase approved retirement income contracts from private insurance companies or other approved retirement programs. The amount of the premium up to $3,750.000 per year would be deductible from federal income taxes. When the insured begins to receive his pension, the income would then be included with any other forms of income and would be subject to federal income taxes.

Full information about the plan is contained in an article in the *Journal of the American Medical Association,* July 26, 1952, vol. 149, pages 1244-1247, or may be obtained by writing to Frank G. Dickinson, Ph.D., Director, Bureau of Medical Economic Research, American Medical Association, 535 N. Dearborn St., Chicago 10, Ill.

J. William Thompson M.D.

Editorials

CIVIL DEFENSE PROGRAMS BEING GIVEN

A series of Councilor District meetings have been held throughout the state this fall with the programs giving special emphasis to "The Management of Trauma as Envisioned Under Atomic Bomb Attack." Mass handling of such contingencies encompasses additional problems to those under usual circumstances.

The "Trauma" phase of each Councilor District program was presented in evening sessions by the Postgraduate Divisions of St. Louis University, Washington University and Kansas University medical schools. Harry K. Purcell, M.D., Department of Surgery, St. Louis University School of Medicine; Ben Eiseman, M.D., Assistant Dean, Washington University School of Medicine, and David W. Robinson, M.D., Department of Surgery, Kansas University School of Medicine, arranged the panels.

The Missouri State Civil Defense Agency cooperated in financing this phase of these Councilor District meetings. Curtis H. Lohr, M.D., St. Louis; Carroll P. Hungate, M.D., Kansas City, and William J. Shaw, M.D., Fayette, members of the Missouri State Medical Association Committee on Medical Civil Defense, gave short explanations before each group, explaining how the Councilor Districts were to be organized for aid to contemplated bomb target areas. They pointed out that the Councilors will be the key men in this Medical Civil Defense plan, which was developed by the Missouri State Medical Association and accepted and approved by the Missouri Civil Defense Agency.

The afternoon sessions of each district meeting consisted of discussions on three subjects common to the field of general practice, namely, "Chronic Vaginitis and Cervicitis," "The Use of Drugs in Infants and Children" and "The Management of Nephritis."

NURSES' LICENSURE

A proposed Nursing Practice Act will, for the third time, be introduced in the Missouri General Assembly when that body meets for the 67th session in January, according to the Editor of *The Missouri Nurse,* who gives the following information about the act.

This measure is sponsored by the Missouri State Nurses' Association, the Missouri State Association of Practical Nurses and the Missouri League for Nursing. The registered nurse group is working shoulder to shoulder with the practical nurses and has assumed leadership with the consent of the latter group because of their more extensive organization as a professional group.

A similar measure, titled the "Nursing Practice Act," was first introduced in the 65th General Assembly, was passed by the House and was on the Senate agenda when the legislature adjourned.

Introduced in the Senate in the 66th General Assembly, the measure cleared the Public Health Committee with a "Do Pass" recommendation and was on the calendar when the Senate Adjourned.

The measure was not without opposition. Certain uninformed legislators were afraid the bill might affect "Aunt Mamie" who had donned a uniform and gone about the task of "nursing" the sick of her community as the only source of livelihood open to her. Commercial and correspondence schools, whose standards could not meet those set up in the proposed act, sharpened their hatchets and wielded influence which affected prompt consideration of the measure.

What then is this proposed Nursing Practice Act and why should the doctors of Missouri actively support it?

The act, as proposed, seeks to regulate the field of nursing in order to safeguard, protect and promote the health of Missouri's sick.

It does this through setting minimum standards for schools of professional and practical nursing; by providing for compulsory licensure of all qualified professional registered nurses in the state and by permitting all practical nurses who wish, and are qualified, to become licensed.

It is believed the act will aid in increasing, rather than decreasing, the number of practical nurses by giving them the option of licensure which they do not now have. Sister states, by virtue of similar laws, are inducing many Missouri practical nurses into their states. The act, it is believed, will tend to keep them at home.

The bill does not prohibit free care to the ill by friends or family. It does not mean present practical nurses will have to stop nursing for pay if they are not licensed. It does prohibit them from referring to themselves as "licensed practical nurses" unless they do become licensed under the act.

The regulations do affect those who nurse for pay who wish to be recognized as qualified either as Registered Nurses or Licensed Practical Nurses. All professional Registered Nurses who wish to do nursing in Missouri will be required to secure a license.

Registered Nurses now holding Missouri licenses as professional registered nurses in the state would not be required to reapply for licenses.

All practical nurses who are qualified, and who wish to do so, may become licensed. Upon obtaining a license they would be entitled then to call themselves "Licensed Practical Nurses" and would use the initials "L.P.N."

Organization and Economics

NEWS

Jerome I. Simon, M.D., St. Louis, was elected president of the Doctors' Medical Foundation at a meeting on October 4.

Stanley G. Legner, M.D., Perryville, has been assigned to the State Hospital at Camp Breckenridge, Kentucky, as chief of the Obstetric and Gynecological Surgery Division.

Harold F. Hoelscher, M.D., Warrenton, was appointed county physician of Warren County at the October session of the Warren County Court.

William J. Cremer, M.D., Fulton, was the guest speaker at the Mexico Rotary Club on October 17. His subject was "Misconceptions Concerning Mental Diseases."

A. Morris Ginsberg, M.D., Kansas City, discussed "The Challenge of Heart Disease in Injury" at a joint meeting of the American Society of Safety Engineers and the Association of Industrial Nurses on October 20 in Kansas City.

E. J. McIntire, M.D., Carthage, spoke on "The Heart" before a dinner meeting of the Ladies of Lions at Carthage on October 14.

Virgil O. Fish, M.D., St. Louis, was the guest of the Jefferson County Chamber of Commerce and the Rotary Club of DeSoto on October 7 and spoke on "Let's Leave It Like This."

Claude J. Hunt, M.D., Kansas City, spoke before the Advertising and Sales Executives Club at Kansas City on October 6. His subject was "Advancement of Medical Knowledge Through Scientific Organizations."

Emmet F. Hoctor, M.D., Farmington, was the guest speaker at a meeting of the Sorosis Club in Farmington recently.

The Missouri Public Health Manual on the Control of Communicable Diseases is being revised and will go to all physicians within the near future.

Honored in the state recently by communities or by county medical societies were H. A. Hite, M.D., Green Ridge; R. C. Parker, M.D., and John Zahorsky, M.D., Steelville; William H. Bailey, M.D., Perryville; John Brown, M.D., Perry; Walter D. Pipkin, M.D., Monroe City; E. R. Motley, M.D., Charlotte, N. C. (formerly of Hannibal); U. S. Smith, M.D., Hannibal.

Dr. Harold C. Urey, Nobel Prize Winner in Chemistry in 1934, atomic scientist and distinguished service professor of chemistry, Institute for Nuclear Studies, University of Chicago, delivered the first lecture of this year before the Faculty Seminar, St. Louis University School of Medicine, on November 10. He spoke on "The Surface of the Moon and the Origin of the Earth."

MUSINGS OF THE FIELD SECRETARY

Have you ever heard questioned the value of a Woman's Auxiliary to a County Medical Society? If there is anything to that much discussed and sometimes cussed immemorial, unmeasurable, elusive will-o-the-wisp called "public relations," can you not, without undue mental strain, visualize many ways in which an Auxiliary may promote and definitely enhance the public's understanding of medicine, its problems and its consecrated efforts to the alleviation of human suffering?

On Tuesday afternoon, October 21, the Woman's Auxiliary to the Franklin-Gasconade-Warren County Medical Society held a health day tea at the Presbyterian Church in Union. Representatives of various women's clubs and groups in the three counties were invited guests and some 175 were in attendance. The Auxiliary invited James P. Murphy, M.D., St. Louis, to address the group on the subject "Enjoy Your Age." On this occasion the hostesses also took the opportunity to place in the hands of their guests information on voluntary versus compulsory health insurance and on the cost of medical care.

This particular Auxiliary is of recent vintage, yet this is the second such health day tea they have sponsored successfully. In addition, they are presenting each Saturday morning at 11:30 a.m. a fifteen minute American Medical Association series of health transcriptions over radio station KWRE at Warrenton. They began these radio health education programs in June of 1952. These particular activities represent only a part of this Auxiliary's laudable efforts to be helpful to the doctors and to the people of their section of the state.

The Missouri State Chairman for the 1953 March of Dimes is "Sparky" Stalcup, basketball coach at the University of Missouri. On October 24, Sparky called a meeting of his advisory committee to start the ball toward the 1953 campaign goal. Some seventy-five people representing various organizations and groups throughout the state were present to discuss ways and means of filling the Polio Fund basket. The year 1952 has seen the second highest poliomyelitis incidence in the state. Drive, enthusiasm and the will to win make up a powerful combination and the new chairman brings those potent attributes and many others into the leadership of the Missouri '53 Polio Fund campaign.

NEW MEMBERS

Ames, William H., M.D., St. Joseph.
Callaway, Guy D., Jr., M.D., Springfield.
Clayton, Edgar L., M.D., Springfield.
Ewert, J. O., M.D., Sedalia.
Gernstetter, Sangwill L., M.D., Poplar Bluff.
Gose, Don F., M.D., Springfield.
Klink, Lon B., M.D., St. Charles.
McCann, Louis P., M.D., New London.
Reeves, Gerald A., M.D., St. Charles.
Smith, Harry S., M.D., Springfield.

DEATHS

Joseph, George E., M.D., Salem, a graduate of St. Louis University School of Medicine, 1919; member and former president of the Phelps-Crawford-Dent-Pulaski County Medical Society; aged 62; died September 27.

Karn, Robert B., M.D., St. Louis, a graduate of the University of Tennessee College of Medicine, 1932; member of the St. Louis County Medical Society; aged 47; died October 8.

Leaming, Harry A., M.D., Joplin, a graduate of the University Medical College of Kansas City, 1905; honor member and former president of the Jasper County Medical Society; aged 72; died October 19.

SYMPOSIUM ON CHEMOTHERAPY OF TUBERCULOSIS TO BE HELD

A symposium on "Chemotherapy of Tuberculosis" will be held at Kiel Assembly Hall 3, on December 27 at 2:00 p. m. Alfred Goldman, M.D., St. Louis, will preside and the subjects to be discussed are "Antimicrobial Therapy of Pulmonary Tuberculosis," by Captain Forrest W. Pitts, M. C., and Col. Carl W. Temple, M. C., Fitzsimons Army Hospital, Denver; "The Laboratory Evaluation of the Antitubercular Activity of the Hydrazine Derivatives of Isonicotinic Acid," E. Grunberg, Department of Health, Newark, N. J.; "The Acute Pharmacology in Man of the INAH Compounds," Carl C. Pfieffer, M.D., Chicago, and "Use of Isoniazid and Iproniazid Compounds in Clinical Tuberculosis," M. R. Lichtenstein, M.D., Chicago.

THE COUNCIL

The Council met at the Marquette Hotel, Cape Girardeau, on October 4, 5, 1952, with Victor B. Buhler, M.D., Kansas City, Chairman, presiding.

Those present were Drs. Buhler; J. W. Thompson, St. Louis; E. C. Bohrer, West Plains; H. E. Petersen, St. Joseph; C. E. Hyndman, St. Louis; Victor E. Scherman, St. Louis; W. F. Francka, Hannibal; R. O. Muether, St. Louis; John O'Connell, Overland; J. Loren Washburn, Versailles; R. W. Kennedy, Marshall; W. S. Sewell, Springfield; J. H. Summers, Lebanon; Frank W. Hall, Cape Girardeau; Henry Allen, St. Louis; V. T. Williams, Kansas City; Messrs. W. H. Bartleson, Kansas City; Lemoine Skinner, St. Louis; Raymond McIntyre and T. R. O'Brien, St. Louis.

Invitation to S.M.A.

Mr. O'Brien read a letter from the Convention Bureau requesting that the Southern Medical Association be invited to meet in St. Louis in 1954. On motion it was voted that the Association extend an invitation for it to meet in St. Louis.

Conference of Presidents

On motion it was voted to contribute $75.00, the assessed amount, for the Conference of Presidents, the next meeting of which will be in New York on May 31, 1953.

Treasurer's Report

Dr. Hyndman presented the financial status of the Association, together with the amount that had been collected on the 1951 assessment during this year and stated that 190 members had not paid this assessment.

Advisory Committee to S.S.S.

Dr. Allen spoke briefly on the work of the Advisory Committee to the Selective Service System and this was discussed by practically all present, most of the Councilors having questions that applied to their own Districts. It was brought out that each case is judged individually and that often the Advisory Committee is not informed on what draft boards are doing.

Field Secretary's Report

Mr. McIntyre reported on various activities including survey of county health centers, exhibit at the State Fair, assisting the A.M.A. in studying physician placement work. He announced meetings of the various Councilor Districts for October and November and stated that there would be a series of meetings of the Academy of General Practice throughout the state which began in September and will continue through January. He said that the Committee on Rural Health would meet on October 6 and would formulate a report to the Council on county health centers.

1953 Annual Session

Mr. O'Brien reported briefly on the 1953 Annual Session, giving the dates as April 26 to 29, in Kansas City, and saying that the program was practically complete and that it would be an excellent program. He also said that invitations to exhibitors had just gone out and a good response was being had.

World Medical Association

Mr. O'Brien presented a letter from the World Medical Association and after discussion it was decided that any contribution should be considered by the Budget Committee at the next meeting of the Council and the following resolution was passed:

WHEREAS, The World Medical Association is an Association of the National Medical Associations of 43 countries of the free world, and

WHEREAS, This association is the only international association which can speak for the practicing physicians of the world, and

WHEREAS, There are an increasing number of health problems being decided on an international basis, and

WHEREAS, There is an increasing need for an association to represent the practicing profession, and

WHEREAS, The American Medical Association is one of the Founder Members of the World Medical Association, and

WHEREAS, The American Medical Association is also one of the Founder Corporate Members of the United States Committee, Inc., of The World Medical Associa-

tion and has urged physicians of the United States to become individual members of the United States Committee, Inc., therefore, be it

Resolved, By the Council of the Missouri State Medical Association that it endorses the work of the World Medical Association and of its supporting United States Committee, and be it further

Resolved, That the Council of the Missouri State Medical Association urges the Members of the Missouri State Medical Association to become individual members of the United States Committee, Inc., of The World Medical Association, and thereby aid in the elevation of standards in medical education and medical care throughout the world and ensure that the opinions of the practicing physicians of the world are adequately represented before various international bodies.

Editorship

Dr. Thompson gave the report of the committee to study the editorship as follows:

(a) The Editor shall be appointed for a term of one year, effective January 1, at which time a new volume of The Journal begins.

(b) The Editor may be reappointed by the Council.

(c) The Council shall appoint an associate editor whose term of office shall run concurrent with that of the Editor.

(d) The present Editorial Board be eliminated January 1, 1953.

(e) The Committee on Publication, now composed of five members, shall be continued with addition of five associate members. The Editor shall automatically be a member of the Committee. An elective member of the Council shall be appointed to serve as a member of the Committee. The Chairman shall be appointed by the Council.

(f) The Committee shall have complete charge of The Journal and any other publication of the Association; shall determine the scientific, editorial, news and advertising content of The Journal and shall render a report annually to the Council.

Upon motion, this was passed.

Journal Changes

Dr. Williams spoke on changes he would like to make in The Journal beginning January 1 and after discussion it was decided that the advertisement could be taken off the front cover and that Dr. Willimas could make other suggested editorial changes. He stated that Dr. Muether would remain in charge of scientific material.

Blood Banks

Dr. Buhler presented the following from the proceedings of the A.M.A. House of Delegates:

"Your committee recommends that the material just read in A and B under "Principles" be transmitted to the American Hospital Association and each constituent state medical association for transmittal to their respective state hospital associations.

"A. Since blood is derived from human beings only, our aim should continue to be directed at having no profit from trafficking in whole blood itself. However, all services rendered cost something and are paid for by or on behalf of every recipient of such services. In the case of the Red Cross operation capital costs, depreciation of equipment, cost of supplies and numerous personal services, technical and otherwise, amount to about $5.00 per pint. It should be made clear that everyone for whom a unit of blood is delivered to a hospital receives not only the blood but also in effect a contribution of at least $5.00 furnished by the subscribers to the American Red Cross campaigns. It is doubtful whether in the long run it would be wise to continue this contribution to persons not otherwise entitled to public support.

"B. The committee has observed the wide variation in service charges in hospitals and blood banks. Local conditions will always cause some variations, but the extremes now observed seem inexplicable. The service charge should cover all costs of the operation including depreciation and expansion reserves, but the realization of profit for the support of other institutional needs should be discouraged."

After discussion it was decided that the resolution be transmitted to the hospital associations.

President's Commission on Health

Mr. O'Brien reviewed the meeting of the President's Commission on Health Needs of the Nation in St. Louis on September 15. He gave excerpts from the presentation by Dr. Thompson for the Association and reported on others, stating that several will appear in The Journal.

Missouri and Kansas Membership

Mr. Bartleson reported that a meeting had been held with officials of the Kansas State Medical Society and of the counties in Kansas which were involved. He said it was decided that the physician should belong to the state association in which he practiced with the exception of the chairman of a department or a member of the policy forming group on the faculty of the University of Kansas, who could belong to the society of his choice. In the case of a physician practicing in both states, if his choice is questioned an appeal to the Council of the State Association and also to the Judicial Council of the American Medical Association, if necessary, for determination. (A complete report will be filed in the Association office.) Upon motion, the report was accepted.

Practical Nurses

The plan of registered nurses to obtain legislation so that practical nurses may be licensed under the supervision of the registered nurse was discussed and after discussion, on motion, this was endorsed.

Survey on Medical Indigency

Dr. Thompson reported for the committee appointed to study and take action on the survey proposed by the Missouri Health Council on indigent care and said that a meeting had been held and that further information on the assessment placed on the Association was being awaited.

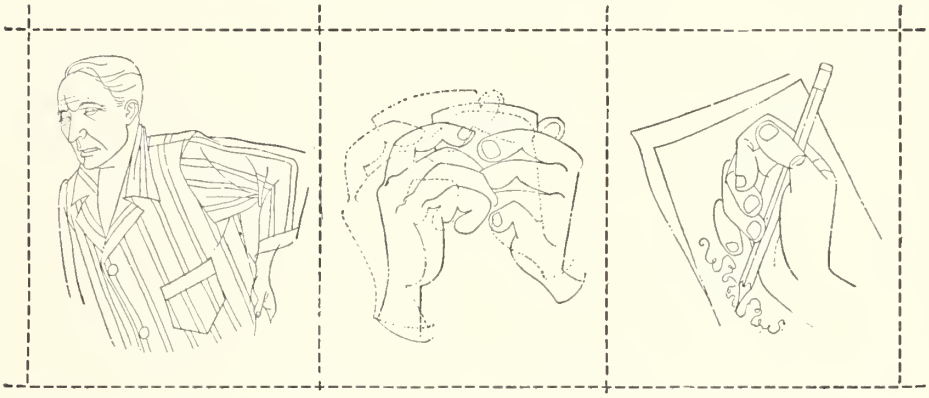
Dr. James R. Amos

Dr. Amos was a guest at the Council meeting and spoke briefly asking for the cooperation of the Council and the Association in the work of the Division of Health. He said that he would welcome working with committees of the Association on various phases of work.

Blue Cross

Recent developments in the St. Louis Blue Cross concerning enlarging the number of hospitals participating in the plan were presented and, on motion, the former stand of the Blue Cross on standards of hospitals was

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endorsed. The position of the Association, adopted by the House of Delegates in 1950, relating to so-called comprehensive hospital plans was reviewed. It was agreed that medical services when included in a hospital contract should be handled by the Blue Shield medical service plans.

Medical Examiner

Dr. Buhler reported that pathologists in the state were working on legislation toward a medical examiner system in Missouri and the general principle was endorsed.

Budget Committee

Dr. Buhler appointed the following Budget Committee: Dr. Hyndman, chairman; Drs. Petersen, Bohrer, Thompson and Muether.

Dr. Hall Thanked

Dr. Buhler expressed the appreciation of the Council to Dr. and Mrs. Hall for their hospitality during the Council meeting.

COUNCILOR DISTRICT NEWS

FIRST COUNCILOR DISTRICT

DONALD M. DOWELL, CHILLICOTHE, COUNCILOR

Grand River Medical Society

Ralph E. Duncan, M.D., Kansas City, discussed "Liver Function Tests and Their Practical Applications" at a meeting of the Grand River Medical Society at the Strand Hotel, Chillicothe, on October 16. The Woman's Auxiliary met with the doctors for dinner and then adjourned for a separate meeting.

E. A. Duffy, M.D., Secretary

Nodaway-Atchison-Gentry-Worth County Medical Society

A dinner meeting of the Nodaway-Atchison-Gentry-Worth County Medical Society was held in Maryville on Monday night, September 29. Donald C. Nilsson, M.D., Omaha, Nebraska, pediatrician, spoke to the group on "Recent Experiences With Poliomyelitis in the Omaha-Council Bluffs Area."

Charles D. Humberd, M.D., Secretary

SECOND COUNCILOR DISTRICT

W. F. FRANCKA, HANNIBAL, COUNCILOR

Chariton-Macon-Monroe-Randolph County Medical Society

The Chariton-Macon-Monroe-Randolph County Medical Society held its October meeting at the Woodland Hospital, Moberly, on October 9.

S. R. Szymanski, M.D., radiologist of the Woodland Hospital, discussed "Radiation Therapy for Common Skin Lesions."

C. C. Cohrs, M.D., Secretary

FOURTH COUNCILOR DISTRICT

JOHN O'CONNELL, OVERLAND, COUNCILOR

The St. Charles County Medical Society served as host to an afternoon and evening Fourth Councilor District meeting on October 14 at the St. Charles Hotel, St. Charles.

Talks on the afternoon program were "Chronic Vaginitis and Cervicitis" by Joseph A. Hardy, Jr., M.D., St. Louis; "Drug Therapy in Infants and Children," by Raymond J. LaDriere, M.D., St. Louis, and "Nephritis" by R. O. Muether, M.D., St. Louis.

After a discussion period, a recess was taken to enjoy the lighter festivities of a social hour.

Following dinner, the evening scientific session which was presented was "Activating the State Plan for Medical Civil Defense," Curtis H. Lohr, M.D., St. Louis, followed by presentations from the faculty of St. Louis University School of Medicine; "Plan of Evacuation of Injured Under Bomb Attack," Harry K. Purcell, M.D.; "Treatment of Burns and Radiation Injuries," Francis X. Paletta, M.D.; "Emergency Wound Care and the Treatment of Wounds of the Abdomen," Charles Sherwin, M.D.; "The Problem of Resuscitation and the Treatment of Injuries of the Chest," Joseph F. Lucido, M.D.; "The Emergency Treatment of Fractures," Carl Fellhauer, M.D., and "The Emergency Treatment of Head, Spine and Peripheral Nerve Injuries," Roland M. Klemme, M.D.

John O'Connell, M.D., Councilor

Franklin County Medical Society

The regular September luncheon meeting of the Franklin County Medical Society was held at the St. Francis Hospital, Washington, on September 30.

Louis N. Berard, M.D., St. Louis, spoke on "Cancer of the Uninary Bladder and Prostate."

Frank Mays, M.D., Secretary

Jefferson County Medical Society

A. W. Neilson, M.D., St. Louis, Chairman of the Committee on Control of Venereal Disease of the Missouri State Medical Association, discussed "Common Skin Diseases," and "Venereal Disease Control in Missouri" at a meeting of the Jefferson County Medical Society in DeSoto on November 7.

John F. Rutledge, M.D., Secretary

FIFTH COUNCILOR DISTRICT

J. LOREN WASHBURN, VERSAILLES, COUNCILOR

Some fifty-five physicians attended a meeting of the Fifth Councilor District at the Missouri Hotel, Jefferson City, on October 23.

Three speakers presented papers on the afternoon program, namely, Joseph Hardy, Jr., M.D., St. Louis, "Chronic Vaginitis and Cervicitis," R. O. Muether, M.D., St. Louis, "Nephritis," and Francis J. Waickman, M.D., St. Louis, "Drug Therapy in Infants and Children."

A discussion period followed.

Participation in the social hour preceding dinner and the evening program was quite satisfactory.

The scientific session for the evening was as follows:

William J. Shaw, M.D., Fayette, "Activating the State Plan for Medical Civilian Defense."

From the faculty of St. Louis University School of Medicine:

B. L. Skinner, M.D., "Plan of Evacuation of the Injured from Bomb Attack."

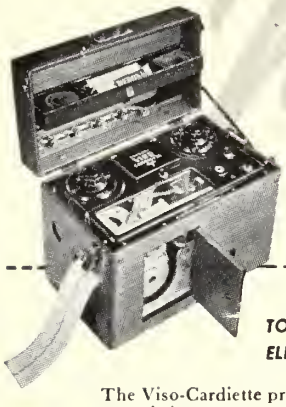
Charles Sherwin, M.D., "The Treatment of Burns and Radiation Injuries."

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Leo V. Mulligan, M.D., "The Treatment of Injuries of the Chest and Abdomen."

Carl Fellhauer, M.D., "The Emergency Treatment of Fractures."

E. A. Smolik, M.D., "The Emergency Treatment of Head, Spine and Peripheral Nerve Injuries."

J. LOREN WASHBURN, M.D., Councilor

Audrain County Medical Society

Charles Doyle, M.D., St. Louis, discussed "Surgical Varicosities of the Extremities and Other Surgical Procedures" at a meeting of the Audrain County Medical Society held in Mexico on October 16.

The Audrain County Medical Society met at the Audrain County Hospital at Mexico for its regular monthly meeting on November 10.

Joseph C. Edwards, M.D., St. Louis, spoke on "The New Combined Drug Treatment of Hypertension."

HARRY O'BRIEN, M.D., Secretary

Callaway County Medical Society

The October meeting of the Callaway County Medical Society was held October 16, beginning with a dinner at the Fulton Country Club and then adjourning to State Hospital No. 1 for the program.

The scientific discussion consisted of a panel presentation on medical and surgical problems in connection with the water balance of the human body in various diseases. Those participating on the panel were: Thomas S. Fleming, M.D., J. William Fleming, Jr., M.D., Avery P. Rowlette, M.D., L. E. Huber, M.D., W. D. Schute, M.D., and Stanley Szymanski, M.D., Moberly; George W. Hawkins, M.D., Salisbury. Members of the Society who were present are Drs. R. P. Price, J. C. Caldwell, R. N. Crews, Ralf Hanks, Henry Durst, Andrew Lanier, Patricia Lanier, Earl Rusk, E. R. Gish, John J. Brown and George F. Wood.

R. N. CREWS, M.D., Secretary

SIXTH COUNCILOR DISTRICT

R. W. KENNEDY, MARSHALL, COUNCILOR

An afternoon and evening meeting of the Sixth Councilor District was held at the American Legion Hall in Harrisonville, October 23. A good representation of the physicians in the district attended.

The following afternoon program was offered: "Nephritis," Maxwell Berry, M.D., Kansas City, "Chronic Vaginitis and Cervicitis," William C. Mixson, M.D., Kansas City, "Drug Therapy in Infants and Children," Clark W. Seely, M.D., Kansas City.

A discussion period preceded a social hour and dinner.

At the evening session Carroll Hungate, M.D., Kansas City, spoke on "Activation of the Missouri Plan for Medical Civilian Defense."

From the Medical School of Kansas University School of Medicine the following was presented: "Shock Altered Physiology and Treatment," Paul Schloerb, M.D.; "The Open Treatment of Burns," Creighton A. Hardin, M.D., and "Radiation Burns and Sickness," James E. McConchie, M.D.

Lafayette-Ray County Medical Society

A charter was officially presented to the Lafayette-Ray County Medical Society by J. W. Thompson, M.D., St. Louis, President, Missouri State Medical Association, at a dinner meeting of the Society and its Auxiliary, at Lexington, Wednesday night, October 15. Twenty-one people were in attendance including doctors and their guests.

Among the guests were Dr. Thompson, Dr. and Mrs. R. W. Kennedy, Marshall, and Ray McIntyre, Field Secretary, Missouri State Medical Association.

Dr. Thompson in his remarks to the group pointed out the need for such hyphenations of smaller societies. He discussed numerous problems facing the profession today which call for local group thinking and action.

M. C. JOHNSON, M.D., Secretary

Pettis County Medical Society

The Pettis County Medical Society held its first fall meeting at the Bothwell Memorial Hospital, Sedalia, on Monday evening, September 15.

L. M. Garner, M.D., and E. A. Belden, M.D., both of the Missouri Division of Health, were the guest speakers. Dr. Garner discussed the services offered by the Maternal Welfare Division and Dr. Belden spoke on the problems of the Division of Communicable Disease with reference to the lack of the reporting of contagious diseases.

CARL F. SIEGEL, M.D., Secretary

NINTH COUNCILOR DISTRICT

J. H. SUMMERS, LEBANON, COUNCILOR

The Laclede County Medical Society was host to a meeting of the Ninth Councilor District at the Country Club, Lebanon, Thursday afternoon and evening, October 16.

Three interesting and practical subjects were discussed on the afternoon program as follow:

"Chronic Vaginitis and Cervicitis," John Ferguson, M.D., Springfield; "Drug Therapy in Infants and Children," Eugene Schwartz, M.D., Springfield, and "Nephritis," Bruce Lemmon, M.D., Springfield.

Following a discussion period a short time was devoted to refreshments prior to a bountiful chicken dinner.

At the evening session Curtis H. Lohr, M.D., St. Louis, spoke on "Activation of the Missouri Plan for Medical Civil Defense." From the faculty of Washington University School of Medicine, the following was presented: "Chest Injuries," Hector Benoit, Jr., M.D.; "Maxillo-Facial Injuries," James Chamness, M.D.; "Head Injuries," George Rouhlac, M.D.; "Fractures and Extremity Injuries," Richard T. Odell, M.D., and "Shock and Burns," C. Barber Mueller, M.D.

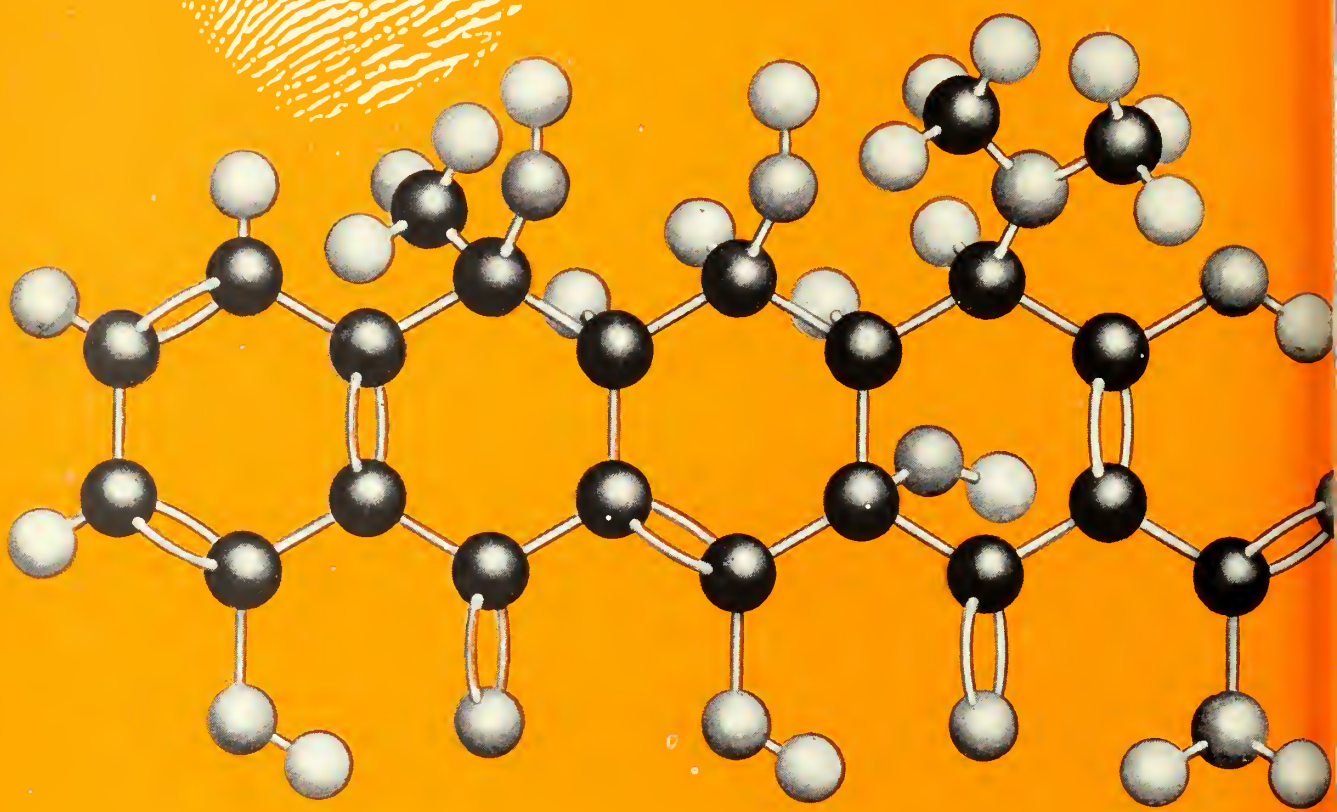
J. H. SUMMERS, M.D., Councilor

Phelps-Crawford-Dent-Pulaski County Medical Society

Fifty people, including doctors and guests, attended a dinner meeting of the Phelps-Crawford-Dent-Pulaski County Medical Society held in conjunction with a postgraduate session of the Missouri Academy of General Practice on Thursday night, October 30, at Rolla. The meeting was held in the Pine Room of the Greyhound Bus Station where plenty of fried chicken was served.

M. Pinson Neal, M.D., Columbia, and Glenn McElroy, M.D., Columbia, presented the scientific program of the evening, Dr. Neal, in his usual effective way, discussed "Acute Abdominal Emergencies of Children."

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Dr. McElroy gave an informative and illustrative talk on "Casts, Splints and Braces."

M. K. Underwood, M.D., Secretary

South Central Counties Medical Society

The South Central Counties Medical Society met for dinner at the El Patio Hotel, Cabool, on Wednesday evening, October 22, with the following members and visitors present: Drs. S. W. Connor, R. W. Denney, H. G. Frame and A. C. Ames, Mountain Grove; Garrett Hogg, Jr., Cabool; T. J. Burns and S. G. Kramer, Houston; Leslie Randall, Licking; M. B. Perkins, Willow Springs; E. C. Bohrer, C. F. Callihan, J. M. Wiles and J. W. Case, West Plains; L. M. Garner, Jefferson City, of the Division of Health, and the wives of several.

After dinner the ladies went to the home of Mrs. Hogg for the evening while the doctors went to Dr. Hogg's office where Dr. Connor, the president, called the meeting to order and turned it over to Dr. Garner who presented a plan for state aid in the care of premature infants.

The minutes of the last meeting were read and approved and the meeting adjourned to meet in Willow Springs on November 19.

A. C. Ames, M.D., Secretary

TENTH COUNCILOR DISTRICT

FRANK W. HALL, CAPE GIRARDEAU, COUNCILOR

Sixty physicians attended the meeting of the Tenth Councilor District at the Rustic Rock Inn, Sikeston, on Thursday, October 9.

The afternoon program beginning at 3:30 p.m. included the following discussions: "Chronic Vaginitis and Cervicitis," Leo J. Hartnett, M.D., St. Louis; "Drug Therapy in Infants and Children," C. Read Boles, M.D., St. Louis; and "Nephritis," Michael Karl, M.D., St. Louis.

Following a question and answer period, an enjoyable social hour preceded a dinner and evening program.

The evening scientific session consisted of a panel on "Trauma" by the faculty of Washington University School of Medicine, as follows: "Chest Injuries," Hector Benoit, Jr., M.D.; "Maxillo-Facial Injuries," James Chamness, M.D.; "Head Injuries," William Hunt, M.D.; "Fractures and Extremity Injuries," Fred Reynolds, M.D., and "Shock and Burns," Ben Eiseman, M.D.

The SEMO County Medical Society served as host to the meeting.

Frank W. Hall, M.D., Councilor

Mineral Area County Medical Society

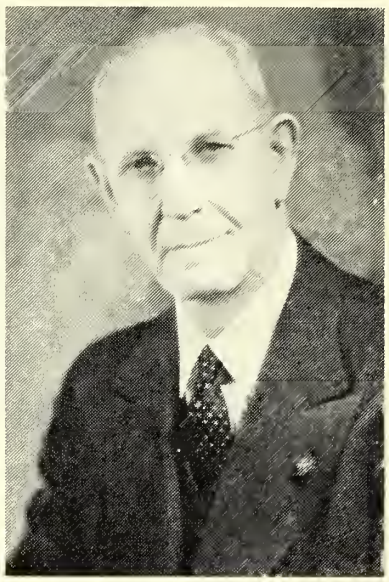
George Becker, M.D., St. Louis, spoke on "Gastro-intestinal Infections and Infestations in Children" at the regular meeting of the Mineral Area County Medical Society at the State Hospital, Farmington, on October 16.

S. A. Lanzafame, M.D., Secretary

Perry County Medical Society

William H. Bailey, M.D., dean of Perry County physicians, was honor guest of the Perry County Medical Society and the Woman's Auxiliary on October 16 at a dinner meeting in Perryville commemorating his Golden Jubilee as a physician.

A bronze plaque with the inscription, "William H. Bailey, M.D., In Commemoration of Fifty Years in the Practice of Medicine, 1902-1952. Perry County Medical Society" was presented to Dr. Bailey by Dr. O. A. Carron, president of the Perry County Medical Society.



William H. Bailey, M.D.

Various members of the Society gave short talks lauding the fine attributes of their senior contemporary.

Mrs. Theodore Fischer, president of the Woman's Auxiliary, passed on to Dr. Bailey many complimentary remarks on behalf of the Auxiliary.

This is the first time in the history of the Perry County Medical Society that a doctor has been honored for completing fifty years in the practice of medicine.

Dr. Bailey, in his remarks to his admirers, gave his formula for longevity—have a favorable heredity and be temperate about all things and do not worry. He said, "A short life is the interest you pay for borrowing trouble and worry."

J. F. Lutkewitte, M.D., Secretary

CORRESPONDENCE

HOXSEY CANCER CURE

To the Editor:

You may be interested in the enclosed opinion of the U. S. Court of Appeals for the Fifth Circuit in the case of U. S. v. Hoxsey Cancer Clinic, a Partnership, and Harry M. Hoxsey, an Individual. This opinion is the result of an appeal in a vigorously contested case tried in the U. S. District Court at Dallas, Texas. It reverses the judgment of the trial Judge (William H. Atwell, N. Dist. of Texas) and directs that Court to issue an injunction prohibiting the defendants from distributing in interstate commerce brownish-black, and pink, liquids intended for the treatment of cancer in man.

In many parts of the country, people are taking the Hoxsey medicines in the belief that they may be an effective treatment for cancer. Friends and relatives of cancer victims frequently query local physicians concerning this treatment. You may wish to publish information about this case so that physicians will

have the facts at hand concerning these drugs, in the event of such inquiries.

The following important principles are laid down in the Circuit Court opinion, based on testimony by cancer experts.

1. ". . . there is only one reliable and accurate means of determining whether what is thought to be cancer is, in truth and fact, actually cancer. This requires a biopsy, a microscopic examination of a piece of tissue removed from the infected and diseased region."

2. ". . . the opinion of a layman as to whether he has, or had, cancer, or a like opinion as to whether he has been cured and no longer bears the disease, if, in fact, it ever actually existed, is entitled to little, if any, weight."

3. ". . . despite the vast and continuous research which has been conducted into the cause of, and possible cure for, cancer the aggregate of medical experience and qualified experts recognize in the treatment of internal cancer only the methods of surgery, X-ray, radium and some of the radio-active by-products of atomic bomb production."

4. ". . . upon such subjects a Court should not be so blind and deaf as to fail to see, hear and understand the import and effect of such matters of general public knowledge and acceptance, especially where they are established by the overwhelming weight of disinterested testimony. . . ."

The Hoxsey Clinic is located in Dallas, Texas, and ships its drugs to patients in many other States. According to the unanimous opinion of the Court of Appeals, consisting of Judges Russell, Hutcheson, and Rives, "the overwhelming weight of the credible evidence requires a conclusion that the representation that the Hoxsey liquid medicines are efficacious in the cure of cancer is . . . false and misleading. The evidence as a whole does not support the finding of the trial Court that 'some it cures, and some it does not cure, and some it relieves somewhat.'"

Under the law the defendants still have the right to petition for review by the U. S. Supreme Court.

Background information on the Hoxsey Clinic is given in the attached report prepared by the Division of Medicine of the Food and Drug Administration.

Very truly yours,
C. W. CRAWFORD
Commissioner of Food and Drugs

PROFESSIONAL RELATIONS

MISSOURI CONFERENCE FOR THE IMPROVEMENT OF THE CARE OF THE PATIENT

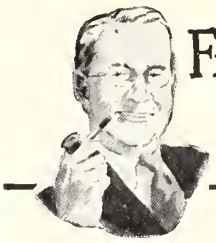
September 19, 1952

To the Editor:

There are three groups in the State of Missouri who are primarily responsible for the care of the sick; the doctors of medicine, the hospitals, and the nurses. They are represented by the State Medical Association, the State Hospital Association, and the State Nurses Association. All three of these groups have recommended that the income tax laws be amended so that all persons who file income tax returns will be authorized to deduct from state and federal income taxes the amount paid for medical, hospital or nursing care, as well as amounts paid for the premiums for health and hospitalization insurance of whatever type. They have directed that their Joint Conference for the Improvement of the Care of the Patient, of Missouri, so state to you, and that the people of Missouri be so informed.

During the past 20 years, we have seen a movement

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From where I sit *by* Joe Marsh

Left Ham Sandwich, 40¢

Ambled over to Bob's Restaurant Tuesday for lunch and noticed a new sign "Left Ham Sandwich, 40¢ . . . Right Ham Sandwich, 30¢."

"Why the sign, Bob?" I asked. "Don't tell me you believe hogs scratch more with their right leg than with their left—so that the left ham is more tender?"

"No," he says. "I don't take any stock in it. But, some people *have* ordered those 'left' sandwiches. When I explain to them that there's nothing to that fable, that the sign is just a business-getter, and I've only *one* price, they enjoy a regular, old-fashioned, plain ham sandwich all the more!"

From where I sit, stories like "right" hams being tougher than "left" ones are with us because some people get ideas and hang onto them for dear life. It's like those people who would interfere with a man practicing his profession or those who would deny me a glass of beer. I say let's keep our opinions free from being "sandwiched-in" by misinformation.

Joe Marsh

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in this country which has resulted in the enrollment of over 75 million persons, most of them voters and tax payers, in voluntary hospital and medical care insurance plans. These millions of people, by paying small amounts in advance, are providing benefits for themselves in the event that they may become sick or require hospitalization. The federal government recognizes that these plans are worthwhile by authorizing tax deductions for premiums paid as well as for all other health care expenses in excess of 5 per cent of earned net income. These deductions apply to all citizens who file income tax forms. Obviously, because of the 5 per cent exclusion, few person are able to claim a tax deduction for health expenditures.

The Congress of the United States during 1952 adopted legislation which provides for tax exemption from federal income tax, for all persons 65 years of age or older, of all expenses for medical, hospital and accident insurance plans. When the people of Missouri are sick and helpless, the doctors, nurses, and the hospitals take care of them. Thru their state associations all three of these groups have recommended that similar tax exemption be provided for all of the people. Most of us believe that health comes first.

We should like to have your opinion of this proposal and invite a reply from you.

Yours sincerely,
Irene F. McCabe, Executive Secretary,
The Joint Conference for the
Improvement of the Care of the Patient
of Missouri

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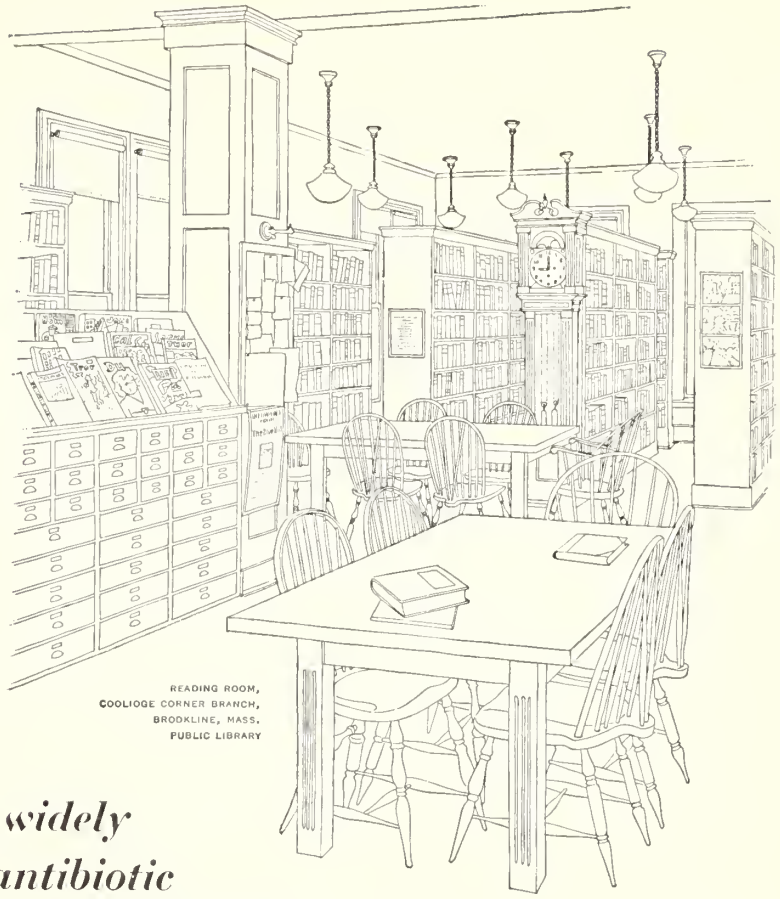
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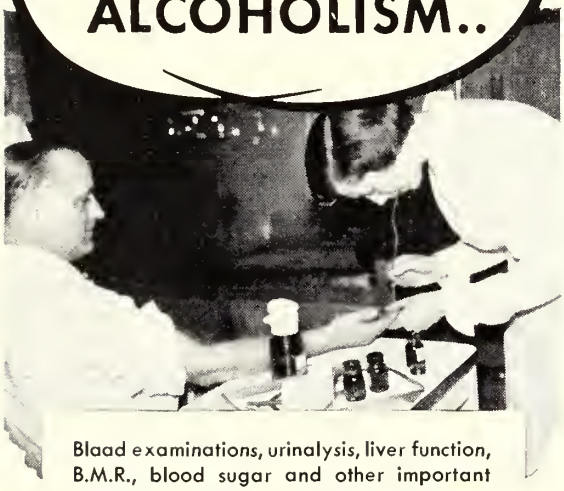
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BOOK REVIEWS

Toxemias of Pregnancy, by William J. Dieckmann, S.B., M.D., Mary Campau Ryerson Professor and Chairman of the Department of Obstetrics and Gynecology of the University of Chicago; Chief of Service of The Chicago Lying-in Hospital and Dispensary; Attending Gynecologist, Albert Merrit Billings Memorial Hospital of the University of Chicago; Associate Editor of the *American Journal of Obstetrics and Gynecology*. Second Edition. C. V. Mosby Company, St. Louis. 1952. Price $14.50.

The first edition was a classic and found use in many departments besides obstetrics and gynecology. Eclampsia is not a disease which is limited to the reproductive organs but involves most, if not all, the tissues of the body. The term "toxemia of pregnancy" is a composite one for a group of diseases which occur during pregnancy, or the early puerperium, and are characterized by the appearance of one or more of the following signs: edema, proteinuria, hypertension, convulsions and coma.

Dr. Dieckmann reemphasises the American Committee on Maternal Welfare classification of toxemia and he has now more than seven thousand toxemic deliveries which have been classified and coded.

The data seem to indicate that toxemia of pregnancy, especially eclampsia, are diseases of culture and civilization, probably because of the mental strain and stress and changes in diet and habit. The instance of eclampsia tends to be high in those cities of the United States which have a high average temperature, a small range of temperature and high major of rainfall.

In Section 2 there is much discussion on the normal and abnormal physiology particularly of value to the student and for reference.

Section 3 is a big addition on etiology of toxemia. Dr. Dieckmann has added much of his own work in this section and has reviewed the literature since 1940. Most internists and a few obstetricians who have studied this condition believe that the primary lesion is an arterial vasoconstriction.

Section 4 is devoted to the clinical aspects of the toxemias of pregnancy. This section is so well put together that it should be a bible for all students of toxemias of pregnancy.

Treatment of eclampsia and preeclampsia is still unsettled and will remain so until the etiology of the condition is known. Dr. Dieckmann states that part of the difficulty in determining the proper course of treatment lies in the fact that there are two primary conditions, preeclampsia and hypertensive disease with different etiology and pathology but either of which may terminate in convulsions and coma. He suggests sedation for the hypertensive disease and delivery for the preeclamptic patient. The historical résumé of the treatment of eclampsia is in detail and should be reserved for reference. He reviews all the medical management of toxemia of pregnancy and through his work the cesarean section rate for toxemia of pregnancy has decreased markedly.

The only indication for cesarean section in toxemic patients is cephlopelvic disproportion or after medical management has failed in the severe preeclamptic or eclamptic patient who is near term, not in labor and has a closed unefaced cervix.

Section 6 is devoted to maternal and fetal prognosis and prenatal care. Eclampsia is a serious condition but if the patient survives the disease the ultimate prognosis is generally good. Sepsis is fast giving way to toxemia as the chief cause of maternal death. The total fetal mortality in patients with eclampsia ranges from 20 to 60 per cent, an average of 35 per cent.

Prenatal care is important in detecting chronic disease in pregnancy. Intelligent prenatal care has decreased the instance of eclampsia and lowered the fetal and maternal mortality. Intelligent prenatal care which means the proper interpretation of symptoms and signs, together with marked curtailment of sodium and the maintenance of proper elimination, has lowered the instance of eclampsia and severe preeclampsia. Thus, while eclampsia and preeclampsia are one and the same disease, differing only in degree, convulsion and coma can be prevented by intelligent obstetric treatment. H. K. K.

When Minds Go Wrong, A Simple Story of the Mentally Ill—Past, Present and Future, by John Maurice Grimes, M.D. Twenty years a psychiatrist. Four years a staff member of the Council on Medi-

cal Education and Hospitals of the American Medical Association. Author of "Institutional Care of Mental Patients in the United States." First Edition. Illustrations by K. Alexandra White. Published and distributed by the author, 5209 S. Harper Ave., Chicago 15, Ill. 1949. Price $5.00.

This book is based upon the personal experiences of the author as a psychiatrist and his wide contacts with mental hospitals in his service to the Aremican Medical Association. He felt an urge, as he puts it, "to tell the true story of the mental patient." It is a frank attack upon our present system of mental patient care.

Dr. Grimes points out "that the human mind, the most marvelous product of life in the world, is the world's most neglected treasure. The gross neglect is most obvious *when minds go wrong*. When that happens, the patient's fate becomes a matter of profound indifference. "We react as though the repairing of minds that go wrong were in most instances practically impossible and, therefore, not a matter of real social concern."

He says that state care or "put away" plan is poor as is state care everywhere and that this care is directed by a profession that "capitalizes on the mystery involved, does not want results too closely checked on, and gets away with murder." He says his medical training had prepared him to treat the bodies of patients, but he had little or no training in "mental medicine" and it was not until his intern year that he learned that physically sick persons were also mentally sick.

In his two years' investigation of conditions in the mental hospitals in the U. S. for the American Medical Association, he came to the following conclusions:

1. That the facts gathered about hospitals contained "dynamite—mental hospital dynamite."

2. That only an "insider" could ever learn the true story of mental illness and its treatment.

3. He classified psychiatrists as the following—saints, zorros, robinhoods and gigolos. Psychiatrists use the term psychoneurosis "not to educate the other players but to run the game and collect the bets."

4. One half million citizens in the U. S. A. are mental patients. They are growing steadily more numerous and they already outnumber the physically sick. The number outside institutions is even greater than the number within them. The problem of mental illness is the biggest problem known to medical science.

5. If progress is to be made there must be simpler and clearer classification of mental disease. "Psychoneuroses are merely social and psychological problems." Diagnosing a patient as either organic or functional is not difficult. For patients suffering from a functional disorder, "a little practical psychology will suffice."

6. Civil Service is not the answer to the personnel situation. State hospital care must be administered by a board of competent persons. Nurses and other professional personnel must be substituted for attendants. Attendants are the political appointees and frequently determine the quality of care.

Dr. Grimes seems to over-simplify the treatment problem but points out clearly and ruthlessly the abuses. He makes suggestions for remedying the abuse.

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Subscription: $3.00 per year; 40 cents per copy.

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